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ORIGINAL ARTICLES.

THE TREATMENT OF CHOLERA.

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PERSONAL experience during two epidemics of cholera will, I trust, be considered some justification for adding another to the numerous papers that have appeared on the subject of cholera. Unfortunately, it cannot be said that the lessons of experience have been fruitful in curative results, but they afford unmistakable indications as to the direction our efforts should take in the future, and they have settled opinions as to the practical value of many of the proposed remedies. Until Koch's discovery of the comma-bacillus there had been no scientific basis for the therapy; but even now, with all the aid afforded by this great fact, the problem of a cure for cholera remains unsolved. The mortality-rate continues nearly at the same level, and although the epidemics have lessened in severity, these facts only show that sanitation has done much, whilst therapy, if not impotent, has been at least unequal to its prescribed task.

The theory of a cholera-seizure, based on the existence and agency of a specific microbe, may be stated as follows:

The parasite, reaching the intestinal canal by any of the several channels of communication, finds there a suitable nidus, and undergoes pullulation, increasing enormously in numbers, and producing as a result of its vital activity a peculiar poison—a ptomaïne—and on the action of this morbid material depends the systemic symptoms as they successively arise. First, we have the evidences of a local irritation—the cholera-diarrhea—due to the presence and development of the bacillus on the surface of the mucous membrane. Next is the stage of systemic infection, due to the absorption of the ptomaïne, quickly followed by the algid state, and then, should reaction occur, a typhoid condition. An important chemical change also takes place, consisting for the most part in an increased alkalinity of the intestinal juices and of the blood. Coincidently with these alterations occurs an extraordinary change in the mucous membrane; its epithelial layer is detached more or less completely, and the basement membrane laid bare. The normal functions are necessarily abolished, and the transudation from the bloodvessels is enormously increased. This outward diffusion of the blood-serum makes the blood thick, and its movement in the vessels sluggish, and the blood-globules become so much changed in structure as to be unable to functionate.

Such is the "therapeutic diagnosis" on which we now base our measures for relief.

The first point is to arrest the preliminary diarrhea. There are three indications for the use of remedies: the presence of a parasite in process of pullulation; the excessive alkalinity; the diffusion of the blood-serum from the vessels into the intestinal canal.

Of all the remedies proposed for the arrest of the diarrhea, not one has done so much good, in the writer's experience, as sulphuric acid. It is usual, and generally best, to combine some opium with it, according to the formulæ given below.[1] Sulphuric acid is a germicide; it neutralizes the alkalinity of the intestinal canal, and promotes diffusion into instead of outward from the vessels. During past epidemics opium has had an important place as the principal, or the adjunct, or associated, remedy. The experience of the present epidemic is against the use of large doses of opium, because of the narcotism, and the paralytic state of the intestine thereby induced. On the other hand, small doses, especially for the control of the preliminary diarrhea, are quite indispensable. I find that amongst those who are against the free use of opium, is Rumpf,[2] whose observations were made in the New General Hospital at Hamburg during the present epidemic, and also the veteran Ziemssen.[3] Both, however, find small doses useful in certain conditions, amongst which the preliminary diarrhea is most important. So necessary is opium during the first stage that all the formulæ most popular during the past and present epidemics contained it. I may mention the preparation of Squibb, which is largely used now as formerly. This contains rhubarb, aromatics, and the deodorized tincture of opium. According to Meyer the

[1] ℞.—Acid. sulphuric. aromat. . . . . ℥v.
Tinct. opii deodorat. . . . . ℥iij.—M.
Sig.—From ten to twenty drops every hour or two in sufficient water.

℞.—Acid. sulphuric. dil. . . . . ℥iij.
Tinct. opii camph. . . . . ℥xiij.—M.
Sig.—A teaspoonful every half-hour or hour in water.

[2] Deutsche med. Wochenschr., 1892, No. 39. Abstract in Centralblatt für die gesammte Therapie, November, 1892.

[3] Münch. med. Wochenschr., 1892, No. 41. Ibid., Dec. 1892.

prescription given below[1] was employed for a diaphoretic action, and for the diarrhea a decoction of rhatany, with tincture of cinnamon and tincture of opium. Ziemssen advises fifteen drops of the tincture of opium in infusion of chamomile as an enema, to restrain the diarrhea. In India, chlorodyne—the original nostrum—has had the first place as a remedy for all stages of the disease. This preparation contains two ingredients of especial value, namely, morphine and atropine. Also, pills of lead acetate and opium, of tannin, capsicum, and opium, of camphor and opium—with or without tannin and capsicum—were largely employed. Indeed, it is impossible to name the various combinations in which confidence was reposed—each physician having his special pill or mixture. I should mention, also, that homeopathy had its favorite remedy in Rubini's solution of camphor—a saturated solution in alcohol. Almost any of the various combinations of remedies proved equal to the arrest of the preliminary diarrhea, if administered early enough. The case was far different when systemic infection occurred.

During the existing epidemic the treatment of cholera-diarrhea has been attempted on a scientific basis, and various new remedies have been brought into use. The modern doctrine of antisepsis, and the discovery of the cholera-bacillus, have led to the employment of germicides, which are administered with the view to arrest the development and to destroy the product of the cholera-microbe. But conclusions drawn from the results of the treatment of cholera-diarrhea can be depended on only when bacteriologic examinations have shown the presence or absence of the cholera-bacillus. The severity of the diarrhea is not a means of differentiating, for it has been found that in very mild cases the bacillus may be present,[2] and in cholera morbus there may be all the symptoms of true cholera, without a single parasite in the intestinal canal. In the absence of a proper bacteriologic diagnosis, the curative action of any remedy cannot be determined.

The remedies from which the most has been expected were salol and creolin. From a theoretic standpoint nothing could be more appropriate than the action of salol, for this substance is supposed to pass through the stomach unchanged and to be separated into its constituent elements—salicylic acid and phenol, by the alkaline intestinal juices; but the practical outcome has not been so fortunate as its promoters hoped for and predicted. At the Moabit Hospital in Berlin,[1] and at the New General Hospital in Hamburg,[2] salol and creolin were found useless. From my observation of the effects of naphthalin in the various forms of diarrhea, I am inclined to believe that this remedy promises well. As under ordinary circumstances it affects the whole intestinal canal, deodorizes the stools, and restrains the peristaltic movements, it should under the different conditions of a true cholera-attack accomplish similar results. Naphthalin may be combined with bismuth and carbolic acid, and opium may enter into the combination, if necessary.[3]

The experience of the present epidemic is in harmony with that of preceding epidemics as regards the utility of calomel as a remedy for cholera, but on very different grounds. Now it is regarded as the most efficient of the antiseptic remedies. Formerly it was given in truly massive doses—from ℈j to ʒj—to arrest vomiting, to secure "a change in the secretions," and to bring about bilious evacuations; and it was also administered in small doses (from ½ gr. to 2 grs.) to arrest vomiting, to act on the liver, and to exert its specific action on the gums, for it was not uncommon to hear a practitioner say: "If only the gums were touched," the case would take on a different aspect.

Rumpf maintains the superiority of calomel as a remedy over all other remedies that have been used thus far in the treatment of cholera. Ziemssen, also, strongly advocates it, administered in somewhat larger doses—usually giving a large single dose (8 grs.) at the outset, and smaller doses at short inter vals thereafter. At the Hamburg New Hospital the initial dose was 4 grs. and subsequently every two hours 0.02–0.05 grams[=⅓–¾ gr. nearly] (Rumpf.) The administration of the calomel was kept up during the first and second stages. Similar use was made of calomel at the Moabit Hospital, Berlin.

Enteroclysis has come into use during the present epidemic. The method of Cantani, who is the author of this expedient, consists in irrigating the intestine with a solution of tannic acid. His directions are to take from 5 to 10 or 20 grams [1¼ ʒ to 2½ ʒ or 5 ʒ] of tannic acid in from 1½ to 2 liters [1 to 2 quarts] of hot water or chamomile infusion, and to this add from 20 to 30 drops of laudanum, and suspend by means of gum arabic,

[1] Münch. med. Wochenschr., October, 1892, p. 591:

℞.—Ol. menth. pip. . . . . gt. j.
Tinct. opii . . . . . ♏xx.
Tinct. rhei vin. } . . . . . āā ʒj.
Tinct. capsici }
Spirit. vini gallici . . . . . ʒij.—M.
Sig.—A teaspoonful in black tea.

[2] Dr. William Russell: London Lancet, December 3, 1892.

[1] Russell: Lancet, December 3, 1892.

[2] Rumpf: Centralblatt für die gesammte Therapie, November, 1892.

[3] ℞.—Naphthalin. . . . . ʒss.
Bismuthi salicylat. . . . . ʒij.
Acid carbolic. . . . . ʒss.
Glycerini . . . . . ʒss.
Aquæ chloroformi . . . . . ʒjss.—M.
Sig.—A teaspoonful every half-hour, hour, or two hours.

from 30 to 50 grams. The temperature should be from 38° to 40° C. [99° to 104° F.] With this the intestine is irrigated. A fountain syringe with a glass reservoir, properly sterilized, is a suitable apparatus for this purpose. Views differ as to the utility of this procedure. At Hamburg and Berlin it was found useless; but Ziemssen, probably on theoretic grounds, urges its use at all stages. It is difficult to understand how irrigation of the large intestine can modify a morbid process going on in the small intestine—for nothing is more certain than that an injected fluid does not pass beyond the ileo-cecal valve. It is not surprising, therefore, to learn that actual experience with this treatment is not in its favor, notwithstanding Ziemssen's ardent advocacy, and Cantani's sanguine expectations.

So long ago as 1834, *infusion* of salines into the veins was practised. It had been seen at this early period how much injury the enormous outpouring of serum must inflict on the constitution of the blood, and on the circulation, and during every epidemic since attempts have been made to arrest the algid stage by supplying fluid to the veins, with marvellous immediate effect, but without permanent results. The modern expedient is less complicated than the operation for transfusion as originally performed. Now a simple reservoir for containing the fluid, a flexible tube, and a needle-trocar for perforating the vein, suitably sterilized, are the instrumental means required. The saline solution most used is one containing sodium chlorid and sodium carbonate. Hayem's solution consists of common salt 5 [= ʒj and ʒv], Glauber's salt 10 [= ʒij and ʒij], distilled water, sterilized, 1 liter [= 1 quart]. Cantani's solution contains 4 [= ʒj] of sodium chlorid, and 3 [= 48 grains] of sodium carbonate in 1 liter [= 1 quart] of water. The ordinary salt solution, properly sterilized, and at the right temperature, suffices.

Cantani[1] proposed the subcutaneous infusion of a saline solution, as a substitute for the intra-venous method. The term *hypodermatoclysis* has been contrived to designate this procedure. The apparatus required for the performance of this method consists of a reservoir for the fluid, a flexible tube, and a hypodermatic needle. The axillary region, the buttocks, and the inter-scapulary and subscapular spaces are suitable sites for the infusion. To secure the admission of a sufficient quantity of fluid, the infusion may be allowed to continue for some time (Samuel's continuous method).

Saline infusion is also practised by introducing the fluid into the peritoneal cavity. The same apparatus as that used for the subcutaneous method may be employed for this operation. The experience with the peritoneal transfusion is very limited for the present epidemic, and it need not, therefore, be considered here.

Infusion of salines is adapted to the treatment of the algid stage, to supply a material to the blood—the serum—which has been lost.

If the immediate effects of the intra-venous infusion could be fixed in a permanent state, nothing could be more effective than this mode of treatment. Unfortunately, the immediate and astonishing improvement is not sustained for any considerable time; in most cases a repetition of the injection becomes necessary in a few hours; the improvement each time is less decided, and still shorter in duration, until finally the injection is without effect and profound and fatal collapse ensues. The mortality in cases treated by intra-venous infusion in the New General Hospital at Hamburg was, in a group of 103 cases, 87, the rate being therefore 84.5 per 100, thus showing but little influence over the results in cases of the algid stage.

As compared with hypodermatoclysis, the advantage, slight as it is, remains with intra-venous infusion. The remarkable change at once manifest in the condition of the patient when the route by the veins is pursued does not occur to nearly the same extent when the subcutaneous infusion is practised; the effect comes on more slowly, and the result, as shown in the mortality following these methods, does not favor hypodermatoclysis. Rumpf declares that the subcutaneous method is not nearly equal to the intra-venous infusion in the algid stage. Both modes of treatment were much employed in Hamburg. In the two hospitals—the New and the Old General Hospitals—the method of intra-venous infusion was more used, and in private practice throughout the city the subcutaneous, especially the continuous method of Samuel, because of the greater care and safety with which it is done, and no assistant being required. At the Moabit Hospital in Berlin, Dr. Guttmann preferred the subcutaneous infusion of salines, and at Koch's Institute the intra-venous method was the favorite.[1]

From these facts it is evident that a final decision has not been reached regarding the comparative value of these plans of treatment, but it seems to me nearly certain that in the algid stage, with fatal collapse imminent, it were better to resort to the intra-venous method. In private practice, hypodermatoclysis is preferred by most of the Hamburg physicians, because an assistant is not needed and the injection is entirely safe, although abscesses have resulted in some instances. The large amount of fluid considered necessary, which is forced under the skin, explains the mishap. Irrespective of this, and considered from the point of view of the results

[1] Centralblatt für die gesammte Therapie, October, 1892. From Berliner klin. Wochenschr., No. 37, 1892.

[1] Russell: Lancet, December 3, 1892, p. 1268.

in blood-transfusion, it is my belief that the quantity of fluid passed into the veins by either mode is much too large, one liter [=one quart] being considered the minimum. Yet at the Hôpital Bonjean, Paris, as much as two liters were injected in twenty minutes, and without any ill result so far as reported.

A new method of treating cholera is the subcutaneous injection of Klebs's *anti-cholerin*, a toxic material obtained from cultures of the comma-bacillus, after the method of Koch. This was also tried at the New General Hospital at Hamburg, and is reported on by Dr. Manchot, who compares the results of its use with the statistics of the intra-venous method. Of 31 cases treated by anti-cholerin there were 21 deaths, the mortality being 67.7 per 100; whereas, of 103 cases (already given) treated by saline infusion, there were 87 deaths, the percentage being 84.5. It should be understood that these were cases of cholera already advanced to the algid stage.

As during the algid stage of cholera the temperature is subnormal, the surface is cold, and the breath cold, the application of artificial heat in the shape of bottles of hot water, hot bricks, etc., was usually practised in past epidemics. During the present epidemic hot baths have been made use of at the Hamburg hospitals. Winternitz[1] extols especially the use of cool sitz-baths and frictions of the body with towels wrung out in the water. In Hamburg, Berlin, and in Russia, but rarely in Paris, hot baths were held in high esteem during the algid stage. The temperature ranged from 38° to 40° C., or from 99° to 104° F. The immediate effect of the bath is to raise the warmth of the body and to increase the pulse-rate and the depth and frequency of the respiratory movements.

The treatment of the algid stage by the use of medicaments during the present epidemic does not differ materially from that of former epidemics. There are some new remedies, however, that deserve consideration. The soluble salts of caffein were much used in Paris subcutaneously, and it is said with benefit. The diuretic action of this agent, as well as its stimulating effect on the circulation, were the chief reasons for its employment. In the Paris epidemic, especially at the Hôpital Bonjean, injections of cocaine, in the dose of 3 cg. [=gr. ss] per day, were administered with excellent results. Rumpf found no benefit from nitro-glycerin, oil of camphor, and other respiratory stimulants. Trussewitch[2] advocates the use of nitro-glycerin—two drops of the centesimal solution at a time placed on the tongue—and the hypodermatic injection of ammonia. As the mucous membrane is desquamating, it were better, no doubt, to inject the nitro-glycerin or amyl nitrite beneath the skin, or administer the amyl nitrite by inhalation. From *a priori* considerations it would appear more useful to administer these agents after the operation of infusion by either mode—for there is apparently little utility in forcing the organs of circulation when the blood is so thickened.

For the cramps which ensue when the muscles are no longer supplied with blood, small doses of morphine subcutaneously are recommended by Rumpf and others. In the last epidemic preceding the present, chloral by hypodermatic injection was highly extolled by some observers. I have no doubt from my personal experience that it has great value, especially when combined with morphine and atropine. As the solubility of chloral is limited, ten grains at a time are all that can be given unless several punctures are made. The following is a suitable formula:

℞.—Chloral. hydrat. . . . . ʒiij.
Morphin. sulph. . . . . gr. j.
Atropin. sulph. . . . . gr. ¼.
Aquæ chloroformi } . . āā ʒss.—M.
Aquæ }

Sig.—Twenty minims, repeated in ten minutes, and subsequently *pro re nata*.

It is usually better to give the chloral separately—ten grains dissolved in sufficient water—and the morphine and atropine together—from ⅛ to ¼ gr. of the morphine and from $\frac{1}{120}$ to $\frac{1}{60}$ gr. of atropine. The effect of chloral on the muscular cramp of cholera is highly satisfactory. The pain ceases at once, the pulse rises, and the breathing gains in depth and volume. The last case of cholera treated by me, and one of the most severe, seemed to be rescued from a fatal ending by chloral injections. In this case, with the coming on of the cramp, the pulse became imperceptible at the wrist, and the respiration almost ceased. When the action of the chloral was felt, the surface grew warmer and pulse and respiration became more active. As, however, morphine and atropine had been given, some share in the result must be ascribed to them.

There are many other methods of treatment of cholera, and various medicaments, to which I have not referred, but this paper has already gotten beyond the space it should occupy. There is, however, a practical point or two in regard to the dietetic management of the disease that I should not fail to mention. The attempt to feed a cholera-patient when the digestive tract is undergoing desquamation is worse than useless. Such a preparation as beef-tea is only harmful at any stage of the disease. A little cold milk or wine-whey may be given as the state of the stomach will permit. The profound depression that occurs in these cases is a constant

[1] Centralblatt für die gesammte Therapie; op. cit.

[2] Ibid., November, 1892; from the St. Petersburger Wochenschr., 1892, No. 36.

temptation to push the use of stimulants, and this practice is usually overdone. A moderate quantity of iced champagne, a little brandy in ice, may be given from time to time. Thirst is excessive, and the indulgence in water-drinking is likely to excite vomiting, but, as Rumpf says, the advantages due to the free use of water more than counterbalance the injury done by a renewal or an increase of the vomiting. Carbonic acid water may agree better than simple water, or such a mineral water as Apollinaris may prove less likely to disturb the stomach. As the renal function is suspended, or nearly so, and as during the typhoid stage the restoration of this function is of the first importance, the free use of diluents may prove in a high degree useful.

NEGLECT OF THE EARLY DIAGNOSIS AND TREATMENT OF PULMONARY TUBERCULOSIS.[1]

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THE great importance of the early diagnosis of pulmonary tuberculosis has been forced upon my attention by finding so many tuberculous patients seeking the climate of Colorado long after their chances of recovery in that or any other climate have gone by. Considering it a matter largely preventable, by the profession realizing more clearly the causes of the conditions that lead to this unnecessary and lamentable loss of life, I have analyzed the last one hundred cases of pulmonary tuberculosis that have presented themselves for examination.

This inquiry has nothing to do with the influence of climate at an altitude or elsewhere (and the cases that have been gathered in the last few months are not considered in any way as to the results of treatment), but was undertaken to find how far the early recognition of the disease and its treatment affected the condition in which the patient came under my observation.

After going carefully over the notes of each case I have made two classes. The *first class* includes those in whom the disease was diagnosticated and treated as soon as the symptoms, as described in the patient's history, showed the disease sufficiently developed to be recognized by any ordinary well-educated practitioner. By treatment as applied to this class is meant any means, hygienic, therapeutic, or climatic, that were seriously used—not that the treatment was necessarily of the best, but that the cases were taken in hand and the patient advised in a reasonable manner. The broad question of treatment or no treatment of the pulmonary tuberculosis is dealt with, and not its details or wisdom.

[1] Read before the Arapahoe County Medical Association, December 27, 1892.

The *second class* includes those in whom the history exhibits the fact that the disease was not diagnosticated or treated for a period varying from a few months to several years after the time that the real nature of the malady had clearly revealed itself. The hundred cases are not in any way selected, but are taken in the order of their examination, tracing back from the recent time when this inquiry was commenced, and were limited to one hundred simply on account of time and labor; but I believe that if an analysis of the notes of all of my first examinations during the past eighteen years, the period of my practice in this locality, were made, the main bearing of the facts would be found the same.

DIAGNOSIS AND TREATMENT were delayed in 52 per cent., while in 48 per cent. the disease was promptly recognized and treated. The total average of delay was two years.

SPUTUM-EXAMINATIONS had been made in only 42 of the 100 cases, and in 7 of these not until some time after the disease was well advanced; so that it may be said that in 65 per cent. this means of diagnosis was neglected when most valuable. Of the 48 cases in which the disease was recognized and treated early, the sputum-examinations were omitted in only 13, while in the 52 cases of delayed diagnosis only 7 examinations were made, and then too late to be of practical value.

STAGE OF THE DISEASE.—Of the 100 cases, 37 were in the first stage; 28 in the second, that is, softening had commenced; and 35 in the third, that of tuberculization, when cavities could be diagnosticated.

Of the first class, 23 were in the first stage; 11 were in the second stage; and 14 in the third stage.

Of the second class, 14 were in the first stage, 17 in the second, and 21 in the third; so that of those who were cared for early there were 48 per cent. in the first stage, while in the delayed class there were only 29 per cent. in the first stage when they came under my observation.

RESULTS.—It is demonstrated by the statistics set forth in my article on "Climate,"[1] that the proportion of cures among the cases in the first stage treated in high climates, such as Colorado and the Swiss Alps, is 62 per cent., while in the second and third stages, taken together, the average is only 15 per cent. These figures show how greatly the chances of recovery have been lessened by the delay.

FAMILY PREDISPOSITION.—In 50 of the 100 cases the patients showed a family predisposition to tuberculosis. In 141 cases that I have reported[2] the percentage was 58; Dr. Denison's 240 cases showed 51 per cent.; Dr. Fisk's 100 cases, 52 per cent.; Dr.

[1] System of Therapeutics, edited by H. A. Hare. Philadelphia: Lea Bros. & Co.

[2] Transactions Climatological Association, 1890.

Theodore Williams reported 44 per cent. among 141 cases, while in the 1000 cases collected by his father and himself the percentage was 48. These figures suggest that the percentage of these 100 cases now analyzed, viz., 50 per cent., is near the average.

In dealing with the question of family predisposition the degree of relationship is of importance; in these 100 cases, parents, grandparents, brothers, sisters, and two or more uncles or aunts, who had pulmonary tuberculosis, are considered as showing family predisposition. Family predisposition was found in 29 per cent. of the first class, while it was found in only 21 per cent. in the second class, viz.: those in whom there was delay. This fact tends to confirm the opinion that I expressed in connection with the 141 cases referred to, that the knowledge of an hereditary tendency makes the patients seek and receive earlier treatment, and also exhibit greater attention in following it out; consequently, better results are obtained than among the non-hereditary cases. In the class in which treatment was delayed the hereditary cases show that there were 29 per cent. in the first stage, while among the non-hereditary there were only 26 per cent.

The average delay among the hereditary cases was 2 years and 5 months, among the non-hereditary 1 year and 10 months. This fact suggests that the disease tends to run a more chronic course among the hereditary cases, which, if true, may be explained by the theory that the family predisposition acts often like vaccination or inoculation, in granting a modified protection, so that the disease is slower to advance. The slightly better results among the hereditary may also possibly be due to inheritance granting a greater power of resistance, as well as teaching greater caution to the individual possessing a family history of tuberculosis.

The whole question of family predisposition, however, requires much more analysis and discussion than the limits of the present article will allow, and its full consideration would lead us away from the more practical matter of how to secure earlier diagnosis and treatment of pulmonary tuberculosis. For instance, the late experiments of Héricourt and Richet[1] upon dogs, which indicate that inoculations with tubercle confer more or less immunity, bear upon the subject. Then, again, under cover of the title, family predisposition, we have two distinct possible causes, though they may be often, and are, perhaps, always more or less allied. These are the direct transmission of tubercle-bacilli through the placenta, or the milk, and the inheritance of a physique favorable to the reception and the growth of the bacilli.

[1] Gaz. Méd. de Paris, October 22, 1892.

If the family predisposition is shown in the parents, and possibly in the grandparents, assuming the tuberculosis to be latent in the parents, we might have direct transmission, with more or less inherited susceptibility of physique. On the other hand, if the family predisposition was shown only in uncles or aunts or brothers or sisters, a susceptible physique would appear to be the only cause through inheritance.

NATIVITY.—In 80 of the 100 cases the patients were natives of the United States; 20 were born in England. Fifty-five per cent. of the American cases showed a family predisposition, while it was exhibited in only 30 per cent. of the English cases.

From previous observations I am inclined to think that a similar proportion of hereditary cases will always be found among the English and Americans, though it requires a much wider analysis to confirm this opinion. In the first class, *i. e.*, those who received immediate treatment, the American hereditary cases were 70 per cent., the English 43 per cent., while the total proportion of Americans in the first class was only 44.5 per cent., and of the English the proportion was 70 per cent. These figures would indicate that among English tuberculous patients the disease receives earlier recognition and treatment; and this point is also brought out in my paper already mentioned, in which the results of treatment are also shown to be better among the English than among the Americans. All this tends to confirm the importance of early diagnosis and treatment.

DIAGNOSIS.—We now deal with what to many is as tedious as a twice-told tale—how to make a diagnosis of early pulmonary tuberculosis; for the handbooks of Da Costa, Vierordt, Fenwick, Tyson, and many others tell us well and clearly how to do this. But why is it not done? Ruling out the cases in which the physician is not consulted in time, or in which he is ignorant or deliberately indifferent, it appears to me, from inquiry into the beginnings of a large number of cases of pulmonary tuberculosis, that the chief reasons are as follows: Among many of the laity and a few of the profession there lingers the old idea that pulmonary tuberculosis is a hopeless disease, whereas of some 5000 cases treated in various parts of the world, including elevated regions, and many of them some years ago, when the treatment was inferior to that of the present day, about 47 per cent. of cures were in those who were in the first stage.[1] And I have no doubt that at the present time, with earlier diagnosis and wiser treatment, the showing would be better. As has been stated, those cases in the first stage that were treated in high climates show 62 per cent. of cures, while 87 per

[1] Article on "Climate," System of Therapeutics, edited by H. A. Hare, M.D. Philadelphia: Lea Bros. & Co.

cent. were benefited; so that I believe it quite reasonable to say that in early pulmonary tuberculosis the chances of recovery are at least equal, and the earlier the diagnosis is made the greater are the chances. The percentage among the averages alone, in which improvement takes place, is undoubtedly higher.

As these statistics include those very grave cases of acute tuberculosis, and those whose poor physique and other disabilities render their chances slight, the average of improvement is brought down considerably. One of the reasons why pulmonary tuberculosis was believed to be hopeless was that before Koch's great discovery a patient was not believed to have the disease until the consuming process was well advanced. We must remember how Niemeyer, writing of what he termed chronic catarrhal pneumonia, spoke of the danger of its becoming tuberculous, whereas now we know that tubercle either preceded the inflammation or was quickly engrafted on it, giving it its chronic character. Then the cases of limited tuberculosis, without marked inflammatory changes, which recovered were not considered tuberculous, and so, being eliminated from the count, did not help to lessen the average mortality from pulmonary tuberculosis. Again, the physician who makes such a diagnosis when the signs are slight is often considered an alarmist, and another is likely to be sought who will say pleasanter things. Besides this repugnance on the part of the physician to declare a patient to have a (supposed) well-nigh incurable disease, and the distaste on the part of the patient who feels comparatively well to believe such a declaration, there still linger among both physicians and their clients two great myths: first, that pulmonary tuberculosis is *necessarily* hereditary, and, second, that it *only* attacks those of weak physique, both of which fallacies statistics destroy. Again, it is often hard for the physician to get the patient to submit to a thorough examination when he seems, perhaps, to be so little ailing, and he is often unwilling to give proper compensation for the necessary time and skill to be expended.

It is so much easier and pleasanter for both parties that a simple prescription for a "cold" be given, that a short holiday be advised, and that it be said "you are all right," than that disturbance be created, that a lot of apparently irrelevant questions be asked, and that the physician be free of the suspicion, perhaps, of wanting to make a case.

It is not given to every practitioner to have the required experience or skill to become a refined auscultator; but he can collect the facts from simple questioning and observation, which, taken together, will seldom fail, if tuberculosis is present, to show him the "handwriting upon the wall."

The question is: How could the diagnosis have been made earlier, and much of the precious time while the disease was yet in the stage of tuberculization saved? Of course, there are cases in which no physician is consulted till the disease is developed; but far more often the tell-tale signs pass unheeded under the physician's very eyes. For instance, one of the most glaring and extremely frequent negligences is not to search into the cause of blood-spitting, to make little of it, and say: "Oh! it came from your throat." Now, bleeding from the throat is very rare, except in acute inflammation or grave affections, in which event the physician's care is also needed; occasionally it comes from the gums or nose, and rarely from the stomach, when other signs will reveal its origin; but an inspection is seldom made.

The lungs are frequently not examined, or only examined through the clothing, when the fine distinctions between the two sides, or the slight change in the character of the vesicular murmur, or the semi-paralyzed chest-expansion, are lost. Even when an examination is made by an experienced auscultator, the signs may be too slight to found a diagnosis upon, yet when coupled with some of the other symptoms, they put the patient at least under grave suspicion, and demand that the physician should watch for further developments. In the meantime let him induce the patient to at least observe the ordinary rules of health and refrain from any indiscretions.

There may be no cough or expectoration and no other signs in the chest, and yet a constantly rapid pulse, a slight rise in afternoon temperature, or a subnormal one before rising, a trifling dyspnea on going up stairs, a little decline in weight, some loss or capriciousness of appetite, or a tired feeling unusually early in the day, may tell the tale, and, in spite of the absence of local signs, are "confirmations strong as proofs of Holy Writ." There is no one of these indications alone to be trusted. For instance, though loss of weight is one of the most constant signs, it is sometimes absent, and owing to, perhaps, a cessation of work or better care of the health being taken at the time, there may be gain instead. In fact, there are cases in which there is very little, if any, constitutional disturbance, and yet pulmonary tuberculosis is established; but such cases generally have distinct local signs, being those in which the tuberculosis is grafted on a preceding pneumonia, bronchitis, or catarrh. In this event, however, there is more or less cough and expectoration, and the microscope will reveal the secret in the sputum.

Some acute affections, such as typhoid fever, may at the outset be mistaken for acute tuberculosis; but as in these conditions the patient should be

watched and taken care of, no harm is done by a short delay in the diagnosis.

If cough, without expectoration and with slight, if any, local or constitutional signs, has persisted, particularly if of a dry, hacking character, tuberculosis should be suspected—that is, of course, after the causes of reflex cough have been well looked into, such as a tickling palate, enlarged tonsils, or disordered stomach. If these do not reveal the cause, then it lies either in the lungs or in some other grave condition of reflex irritation, and the patient should still be watched and directed, not dismissed. When headache and lassitude are complained of in the afternoon or evening, the temperature should be taken; if elevated, the patient should be carefully watched, and before long the cause will be discovered. A chronic bronchitis, or a pneumonia, or a pleurisy that does not clear up should always be suspected, and the sputum examined. Night-sweats, however slight, are to be inquired into. The breathing should be tested by laying the hand lightly on the epigastrium, with watch in hand, while the patient is made to talk, so that his attention is occupied; if the number of respirations is not greater than, say, 22 per minute, the patient may be made to go rapidly up or down stairs, after which the examination is repeated. A red line on the gums next to the teeth, and curved nails or clubbed finger-ends, particularly when blue, are always suspicious. The Scotch say: "Many a mickle makes a muckle;" and so it is from the accumulation of these little signs that the grounds for diagnosis are obtained.

TREATMENT.—Concerning the general outlines of treatment: first, after studying the disease, observe the patient's habits of life, and wherein they are not only adverse to the cure of the particular malady but sin against the general laws of hygiene, and then as far as possible correct them. See first to the digestion, and then give all the nourishment that can be assimilated; keep your patient as much as possible in the air and sunshine; encourage moderate and regular exercise, but never of a sudden or violent character; let it be proportionate to his strength, and gradually increased; but it must be very limited when the heart is weak or there is fever, and should be abstained from when fever is present; have the skin kept active by daily washing or sponging, but beware of fatiguing or chilling ablutions; clothe in wool both day and night, and train him to bear cold; medicate for symptoms or on general tonic principles; and if so inclined, you may experiment cautiously with some of the alleged specifics, such as creasote, but I regard their claims as still *sub judice*, and only to be proved by comparative experiments on a large scale in hospitals. My experience inclines me to believe they are all of doubtful value as specifics, but I think patients often improve under special forms of treatment because of the interest and hope inspired when something is being done for them, and their attention is directed toward getting well, and perhaps more particularly because the physician is likely to see his patient more often and watch him more closely, and so give more heed to the details of his daily life, in the wise direction of which lies the secret of success far more than in any medication.

It must especially be remembered that all sorts and conditions of men may become tuberculous, and you must study the individual and his circumstances as well as the type and stage of the disease, before you can plan a rational and systematic scheme of treatment for him. All this enters particularly into the question of change of climate. The well-to-do, whose domestic ties permit it, are most safely advised to seek at once the climatic change best suited to their case, and where such luxuries as have become necessities to them can be obtained, providing that they are or can be brought into a condition to stand the change. There are many, however, who, on account of their circumstances, cannot leave home, and should not be forced to do so unless home-treatment is not succeeding. Hereditary cases should *always* be sent away. Cases arising where the conditions of life, except the climatic, are good indicate clearly the necessity of change. Cases following pneumonia, pleurisy, and bronchial catarrh, which are slow in clearing up, also should have change. In the hereditary the change must be permanent; in the second group often so; but there is a certain number of cases that have arisen under peculiarly unfavorable conditions of life, and in which removal would be a hardship, and which, if they can be placed under good hygienic conditions at home, instead of bad, can often be safely left, at all events, till some experience is gained of the tendencies of their case. Those also in whom the tuberculosis is not advanced or active, and whose depression of health appears due to digestion or other causes that can be treated at home, may remain and be watched for a time.

Often a change to a different house or soil or different surroundings, physical or social, will start a patient toward recovery, if conjoined with other wise measures. As to what climate should be sought must be decided not on the usual happy-go-lucky methods or from the results in a single case, but by studying the general principles of climatology, and then getting reliable information of the particular resort that is likely to be suitable. Climatology (of which the profession as a whole is grossly ignorant) is not the pure empiricism that many think, but is a science founded on natural laws, and strengthened by rational experience.

ULCER OF THE STOMACH.[1]

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EROSIONS and ulcerations of the gastric mucous membrane often occur as a result of trauma, and, as was long ago observed, readily heal without presenting the characteristic symptoms of "ulcus ventriculi," also known as simple, round, chronic, peptic, corrosive, or perforating ulcer, according to its shape, extent, and the fancy of authors.

Cruveilhier (1829–1835) appears to have been the first to recognize it as an independent affection, and to define its pathologic character. The subject was further elaborated and brought to a clearer understanding by Rokitansky and Virchow, who explained it as depending on a disturbance of circulation, with necrotic changes in the tissues supplied by the affected vessels.

These views have, from time to time, undergone some modifications, so that now autodigestion of the stomach within a circumscribed area is accepted as the pathologic condition associated with the affection. This conception is based upon the assumption that under normal conditions the alkalinity of the circulating blood prevents autodigestion of the stomach, while with the cessation of the circulation after sudden death during the digestive process the stomach undergoes a greater or less self-digestion (gastromalacia.) Any disturbance of the circulation of the mucous membrane of the stomach, whether by hemorrhage into it or by embolic processes within its vessels, must therefore be regarded as a predisposing factor in the production of a peptic ulcer. The exciting element, as already stated, is generally considered to be the action of the digestive secretions on the area deprived of the circulating medium, which, both directly and by diffusion, maintains an alkalinity of the tissues not overcome by the ordinary amount of hydrochloric acid in the digestive fluids.[2]

The ulcer so formed is by no means always round, as an inappropriate designation might imply, but may be variously shaped. It has clean-cut edges, and, as a rule, a clean fundus. It is principally met with in patients between eighteen and thirty years of age, and is found more commonly in women than in men. It shows a tendency to extend in depth to a greater degree than in surface, and is often funnel-shaped. It is generally situated upon the posterior wall of the stomach, near the pylorus, and, as a rule, is solitary rather than multiple. Ulcers extending to the deeper layers of the stomach may give rise to perforation, which, if not followed by fatal peritonitis, may result in adhesions to neighboring viscera. I have recently observed such a case in which, at the post-mortem examination, extensive adhesions between stomach, liver, pancreas, and spleen were found.

One of the most characteristic and important complications of peptic ulcer is hemorrhage from eroded vessels, and the resulting hematemesis. This, in connection with the other symptoms, may be considered as almost pathognomonic.

The tendency of gastric ulcer is generally toward recovery. The resulting cicatrization may cause serious complications by stenosis of the pylorus, and consequent gastrectasis, or even irregular contractions of the viscus. A suggestion of importance is the possibility of subsequent malignant development in cicatrices.

By far the most important and gravest symptom is, without doubt, the excessive hemorrhage that at times occurs. Of forty-three cases of undoubted gastric ulcer that I have followed, both in my own practice, as well as in that of others, in no less than four did fatal hemorrhage result.

Hyperacidity is usually mentioned as an accompaniment of gastric ulcer, and considerable importance has been attached to it. It is true that in many cases the mechanical irritation of the eroded surface by the food causes increased peristalsis and hypersecretion; but in quite a number of cases that I have had the opportunity of examining with this end in view, I have found only normal amounts of hydrochloric acid after the usual test-meal, and it is to my mind doubtful whether the hyperacidity so often mentioned in connection with gastric ulcer is as common as it is made to appear. While gastric hyperacidity often produces intestinal indigestion and intestinal catarrhs, resulting in mal-assimilation, malnutrition, and anemia, which in turn may cause disease of the vessels, and thus predispose to peptic ulcer, I have yet to find that hyperacidity is more common in patients with gastric ulcer than in other persons.

Among the symptoms most noticeable in connection with ulcer of the stomach, pain deserves first attention. It is true that cicatrices of ulcers have been found in stomachs of persons who have never been known to complain of gastric pain; nevertheless, the large majority of cases are brought to our notice by the circumscribed pain in the epigastrium, radiating to the back below the scapulæ. The pain is characterized by its paroxysmal occur-

[1] Read at a meeting of the J. Aitken Meigs Medical Society of Philadelphia.

[2] This is disputed by G. Bunge (Lehrbuch der physiologischen und pathologischen Chemie), who, while offering no other explanation than the resistance of the living cell, asks, in contradiction to the above, why the pancreas is not digested by its alkaline trypsin.

rence and its relation to the taking of food. Thus, coarse food or large meals may cause most distressing gastralgia, and even a moderate meal may give rise to burning pain, which is often accompanied or followed by great nervous anxiety and cardiac palpitation, so that the patient is compelled to loosen his clothing and assume the erect posture. Pressure in the pyloric region increases the pain materially, and may often lead to paroxysms of varying severity. Together with this, the patient feels nauseated, often vomits, complains of heartburn and acid eructations, which cease only with copious emesis of the acid contents of the stomach, generally brought on by the patient's own interference. The vomited matters may or may not contain bile, but they often contain blood in greater or less quantities.

The great diagnostic importance of hematemesis will be realized if we consider the statement that it takes place in from 40 per cent. to 50 per cent. of all cases of gastric ulcer. I think the diagnosis doubtful in cases in which blood was not vomited, and I consider these figures, therefore, unreliable, and the average as greater. When the hemorrhage is large, it may be followed by syncope, and certainly by nausea, and if frequently repeated the patient may sink from loss of blood, which may be expelled by the bowel as well as by the mouth. The dejecta, under such conditions, usually appear as a black, coherent mass, of soft consistence and tarry color, though unchanged blood may, in aggravated cases, be found therein. The ejecta are usually mixed with food, but may be pure blood, generally coagulated, dark, and often fetid, but never frothy, as in hemoptysis; nor is the ejection accompanied by the characteristic cough of the latter.

As hematemesis is met with in cirrhosis of the liver, malignant diseases of the stomach, toxic erosions, hemophilia, and may result from trauma from foreign bodies in the stomach, it is necessary to exclude these in basing a diagnosis of gastric ulcer on hemorrhage, principally or alone. As corroborative of peptic ulcer, in conjunctiom with other symptoms, may be considered the dyspepsia accompanying it. This is manifested by a capricious appetite or even anorexia, eructation and pyrosis, with the so-called "heartburn," which often leaves a sensation of acid acting on the teeth. Together with this, constipation is the rule, varied though at times with occasional diarrhea and the popularly so-call "bilious" spells, with frontal headache.

The chemical examination of the gastric secretions, which has to be conducted with extreme caution, shows, according to some authors, a hydrochloric hyperacidity of from 0.3 per cent. to 0.35 per cent., a finding however, with which, from my own observations, as already stated, I cannot agree. Thus I have found that many, if not one-half of the cases, show a normal acidity, or even occasionally a subacidity.

Measurement shows no ectasis and the motor functions are generally excellent and may be increased. The ectasis resulting from subsequent pyloric stenosis cannot be viewed as symptomatic of the acute affection, though hyperacidity itself may bring about pyloritis and consequent ectasis.

As symptomatic of ulcer and resulting from the copious hemorrhage must be mentioned the extreme anemia that frequently suggests malignancy. It is often difficult to differentiate this secondary anemia from that of the progressive and pernicious type. The recognition of carcinomatous conditions of the stomach, when associated with ulcer, is one of the most perplexing problems for the diagnostician. Fortunately, though the association does exist at times, it is rare. Thus, in a case under my care, the symptoms were those of ulcer alone, when, notwithstanding the fact that the patient had not arrived at the age when carcinoma is ordinarily suspected, it was found at the autopsy that malignant disease of the cicatrix was undoubtedly the fatal lesion.

The diagnosis of gastric ulcer cannot be made from any one symptom, but must be based upon the corroborative evidence furnished by the complexus of symptoms to which it gives rise. Thus the digestive disturbances and gastralgia, as well as the circumscribed pain on pressure in and below the right hypochondriac region, the paroxysmal character of the pain, principally after the ingestion of food, are sufficient to attract the attention of the diagnostician as suspicious of gastric ulcer. If, added to this, there is the characteristic hematemesis, the clinical picture may be considered to be complete. Though pain may be absent at times, the hematemesis alone, when other sources of hemorrhage can be safely excluded, may serve for purposes of diagnosis. The diagnosis cannot be considered as established when based on the pain in the epigastrium alone, and, in fact, no positive evidence may be had of the presence of ulcer unless the chain of symptoms is made complete by the occurrence of hematemesis.

Gastric ulcer must be differentiated from gastric carcinoma. It may be said that the age of the patient is important, ulcer being more common between the ages of eighteen and thirty, and carcinoma after forty. One may, however, be deceived, as in the case already quoted. Rapid emaciation, with cachexia, as well as the presence of tumescence in the right hypochondrium, bespeak carcinoma, although tumefaction may at times also be found with pyloritis resulting from ulcer, and may even be wanting in carcinoma situated on the greater curvature and posteriorly, as I have had occasion to observe. That a chronic affection of the stomach which continues

over a period of three years, and though accompanied with emaciation, but without cachexia and without a palpable tumor, may be viewed as resulting from chronic ulcer, can be accepted as a safe rule, but one which is not without exception. The presence of a more rapidly developing tumescence in the epigastrium may, however, always be considered as evidence of malignancy.

The prognosis of gastric ulcer may, in the main, be said to be favorable, though, as already pointed out, the occurrence of fatal hemorrhage and the complication of progressive anemia, as well as malignant complications, may bring about a moderate percentage of deaths. The proportion of deaths among the forty-three cases that I have followed corresponds with the general statistics recorded. The perforative ulcer offers very few chances, though it has been known to leave adhesions which in themselves may not prove fatal.

The treatment of gastric ulcer may be summed up in a very few words. The primary indication is physiologic rest. If we consider that the presence in the stomach of food and acid secretions stimulates peristalsis, and that peristalsis is adverse to the restorative process, the indications for the control of both are at once established. As an adjuvant to this end and of the greatest importance, is absolute rest in bed. This is necessary, not alone to limit the mobility of the viscus, but it serves the further purpose of preventing tissue-waste, when nutrition must necessarily be limited or inhibited altogether.

The rest of the treatment may be considered as dietetic and medicinal.

The dietetic management is of the greater importance. While absolute bodily rest is a factor not to be neglected, physiologic rest is best secured by withholding all food by the mouth, and the adoption of a system of rectal alimentation. This will be the better borne, as the bowels are usually torpid and constipated and the colon tolerates large quantities of food very well.

To make alimentary injections the flexible rectal tube should always be used, and then introduced beyond the sigmoid flexure. Before resorting to alimentary enemata, the colon should be well cleansed and emptied by a large clysma of tepid water. It is to be remembered that, though the colon is a powerful absorbing organ, it is not a digestive organ, and that all food introduced into it should be predigested. I have been in the habit of employing for this purpose the glucose syrup of the market. This I dilute with peptonized milk, to which is added a moderate quantity of peptonized beef-extract, or the so-called peptone powder offered by the manufacturing chemists. It is fortunate that these peptonized preparations contain little peptone and more albumose, for it is to the latter rather than to the former that we have to look to furnish nutritive albumin. It is a time-honored custom to add from twenty to forty drops of laudanum to such injections, so that they will be retained by the bowels. As opium and the opiates have probably but little local anesthetic effect, I have substituted for them half a grain of cocaine for that purpose, with the happiest results. Treated in this way, by giving two ounces of glucose with one ounce of prepared peptone powder in about four ounces of peptonized milk, together with half a grain of cocaine, about three or four times a day, I have seen patients thrive and even gain weight.

It is customary and it is recommended that in gastric ulcer milk be given in large quantities, and milk alone. In several cases so treated I have observed hard coagula of milk to be vomited, after great distress and with great retching, leading to copious hemorrhage. I should modify this method by giving only partially peptonized milk, which will be found not to coagulate on the addition of acids. To introduce milk into a certainly acid and sometimes hyperacid stomach seems to me a folly which is often dearly paid for. As a substitute for peptonized milk, buttermilk (though not as nutritious but more palatable) may be given, but in small quantities at a time. To vary this, home-made mutton-broths, prepared from stock as required, and into which one or two raw eggs are beaten, are to my mind, much more desirable and decidedly more palatable than the various beef-extracts often recommended. With the absence or diminution of pain after ingestion, this liquid may be supplanted by a little well-soaked cream-toast or milk-toast, a little finely-scraped meat (ham is preferred by some), some rice in milk, custards, or a very soft-boiled egg. If these are well borne, the diet may be gradually increased to stewed fowl, mashed potatoes, succulent vegetables, and progressively to ordinary light and full diet. Carbonated waters, champagnes, koumyss, are generally not well borne and are contra-indicated.

The medicinal treatment demands, by the indications, first of all, alkalies, evacuants, correctives, and measures adapted to meet the complications. Probably no remedy has greater repute in this affection than the salts of the waters of Carlsbad. These should be given in hot water, while the patient is fasting. To avoid nausea, the dissolved salts should be administered in broken doses only. While much is said in favor of the natural salts, I find the artificial product equally as efficient and therefore, sometimes, preferable. A teaspoonful of the latter generally suffices for the purpose of a mild laxative. To assure alkalinity, and neutralization of the acid secretions of the ulcerated surface,

nothing has served me so well as sodium bicarbonate in doses of from fifteen to twenty or even thirty grains, about from half an hour to one hour after the ingestion of food or liquids, and this may with advantage be combined with bismuth subnitrate. Calcium carbonate and also magnesia are recommended for this purpose, but, in my experience, nothing is so well tolerated by the stomach for any length of time as sodium bicarbonate.

To combat the nausea and vomiting, a pill containing extract of belladonna, gr. ⅛, and silver nitrate, gr. ½, may be used with advantage; the latter is said to exercise a curative influence on the ulcerated surface, and by being converted into an insoluble chlorid, diminishes or neutralizes the hydrochloric acid present in the stomach. Pain is best combated by means of subcutaneous injections of morphine. As these may, however, be too frequently called for and lead to a habit not easily broken off, I prefer a pill containing morphine sulphate, gr. ⅛; cocaine hydrochlorate, gr. ¼; extract of cannabis indica, gr. ½, given every three or four hours, after the ingestion of food or liquids. These anal'gesics may with advantage be supplemented by warm poultices or even warm Priessnitz applications to the epigastrium.

To meet the most serious complication, that of hemorrhage, gallic acid, internally, and ergotin or fluid extract of ergot, hypodermatically, may answer. Pieces of ice should be frequently swallowed. Absolute rest is the *sine qua non*. Should the hemorrhage persist in spite of these measures and assume alarming proportions, Monsel's solution, in doses of three or five drops in a wineglass of water, may be administered every quarter or half-hour. Oil of turpentine and the oil of Canada fleabane are often recommended as hemostatics, but my experience with them in this affection has not been encouraging. If the anemia has reached an alarming degree, and if cerebral anemia is apparent, injections of ether and camphor may be practised, followed, if necessary, by subcutaneous infusion of a sterilized solution containing 0.6 per cent. sodium chlorid, at a temperature of from about 100° to 103°. As much as a pint of this may be injected into the subclavicular spaces, from which they are absorbed with remarkable rapidity. For perforation, little can probable be done, excepting absolute rest and the exhibition of cardiac stimulants hypodermatically to combat shock, together with the narcotics necessary to arrest pain.

This brings me to the surgical aspect of the treatment. With the present vast advances in abdominal surgery, may we not look hopefully for good results from surgical interference, both in chronic ulceration as well as in uncontrollable hemorrhage? not to speak of the certainly indicated surgical procedure in perforation of the stomach. The good results of Loretta's operation in pyloric stenosis foreshadow a wide field of usefulness for its application to serious cases of peptic ulcer and its more serious complications.

THE PRESENT STATUS OF DRAINAGE IN SURGERY.[1]

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THE title of this paper, while seeming to embrace the entire subject of surgical drainage, is intended to refer to the question of primary wound-drainage. Our present knowledge of the principles upon which success in the treatment of septic wounds is founded will not permit of even the dream that artificial drainage can ever be eliminated from our resources as a secondary measure in wound-therapeutics; hence secondary drainage or pus-drainage will not be discussed here.

Before the researches and work of Chassaignac, medical history gives us little accurate data as to the progress of drainage through the past ages. We are enabled to trace the principle of drainage in the work of our forefathers in surgery by a continual warfare, with first one and then another faction in the ascendency, as to the relative advantages of the open and closed method of wound-treatment, which was but the expression of a sentiment for or against primary wound-drainage. With limited exceptions, the efforts of older surgeons to establish primary drainage partook of the natural variety, content to accomplish their purpose by so shaping incisions as to facilitate discharge, or by the practice of a partial or complete open method of treatment. I say this was the method, with limited exceptions, for we do find mention of the introduction of pledgets of lint and gauze as a primary procedure, though the purpose and limitation of these measures were poorly understood. As a matter of fact, the prevailing idea was that they gave an exit to products of inflammation, and they were left in the wound long enough to provoke what it was intended to relieve. To the great discredit of some modern surgeons, traces of this combined primary and secondary drainage, or perversion of drainage, are still to be found at the present day.

Interesting and instructive as it would be to trace the great principle of drainage through the network of advances in past surgical progress, it is not of direct and practical importance enough for our present purpose. The subject of primary wound-drainage may be said to be under very active discussion at the present time. It is true the argument

[1] Read before the Southern Surgical and Gynecological Association.

is, in some respects, a subdued one, for men naturally hesitate to take sides against a measure which every surgeon recognizes has been second to none in saving human life; yet, within the past two years, and especially within the past twelve months, we have all seen in the journals and society reports long lists of operations, all with the ever-inserted line "Closed without drainage." Converse in private with almost any one of the authors of such a paper, and you will find him more bold, probably admitting that he believes the time has arrived in wound-treatment when primary drainage can be dispensed with entirely.

We all know that beneficial as drainage is, and has been to our art, yet it is not without its evils; that in its application we either introduce into wounds a foreign substance, or at least an objectionable material. Hence we hail such expressions as at least prophetic of the time when our ideal shall be attained; when the brilliancy and achievements of modern surgery shall have forever reduced the open wound to the benign conditions of a subcutaneous one. Again, in accounting for the facts contained in such assertions as those referred to, we attempt to explain by the different conditions that probably surrounded the work of such men; the nature of the operations performed must have been very different from that of those encountered by men doing a different line of work, or general surgery. In others such reports tend to create a feeling of dissatisfaction with their own work (a good feeling to have produced at times), probably mingled with the disagreeable thought that they are not in the front file.

After twenty-two years of the more or less scientific use of primary artificial drainage in open wounds, we are confronted with the question: Is drainage a necessity; if so, when, and what is the best method of practising it? The reply to the first part of our question involves a brief *résumé* of the principles upon which primary drainage is founded. Such drainage is intended to convey from cavities and recesses of wounds, blood and serum. When the physiologic time for this has expired, the function of primary drainage has ceased. This time, with rare exceptions, is fairly definite, and is between twenty-four and sixty hours. To wait longer is to encourage trouble by the maintenance of a disagreeable guest; to remove before the lapse of twenty-four hours is taking risks not warranted in the premises. When the surgical conditions are such as to give evidence that its work is accomplished, the drain should be removed.

Primary wound-secretion is justly accredited with being the nidus or soil upon and in which multiply and develop the noxious agents so inimical to healthy wound-repair; hence the limitation of its production, its sterilization or its removal by some channel from the wounded tissue becomes a surgical necessity based upon the soundest surgical science. If we secure a limitation in the production of serum, or its sterilization *in situ*, is the successful progress of a wound assured without drainage? As to the first, we answer unhesitatingly "Yes." The nature and extent of a wound, the character of tissue involved, or both, may be such that with careful aseptic precautions and thorough hemostasis, the production of serum is practically prevented—at least as a factor in disturbed repair; hence, drainage is not only superfluous, but detrimental. In the more extensive wounds, we have in the buried gut-suture a means of the greatest value in enabling us to dispense with drainage by obliterating spaces, securing compression and rest, and thus preventing pernicious collections of serum. If we ever expect to succeed in the successful and uniform closing of large amputation-wounds without drainage, I feel satisfied that it can only be accomplished by means of the deep buried suture, which obliterates the deeper parts of such wounds. Other means, while often successful, are not attended with the positive and uniform results that should characterize most modern surgical work. In this connection it may be added that the same principle of deep suture may often be carried out by greater attention to extraneous means of compression by gauze compresses, which, by compression from without, tend to obliterate internal spaces. As an accessory means of limiting serous exudation must be mentioned the necessity of a more general use of measures of immobilization in soft-tissue wounds, and thorough attention to systemic or alimentary drainage. Thus, when the production of serum can be limited, other things being equal, drainage may be dispensed with.

Secondly, Will the sterilization of serum *in situ* assure the progress of a wound without disturbance? Let us dwell upon this a moment, for in the elucidation of this point rests the chief answer to the question: "Can drainage be dispensed with?" To illustrate this point, we will suppose a wound under the following favorable conditions: Perfect sterilization of all tissue adjacent and in the lines of continuity; perfect sterilization of everything brought in contact with the wound; perfect hemostasis; perfect approximation of the skin and superficial structures, and perfect protective dressings. The only undesirable feature about such a hypothetic case as that stated is that there are deep spaces and pockets in which serum accumulates.

With all the aforestated favorable protective conditions, it is reasonable to suppose that this serum is as unoffending as in a subcutaneous wound. We grant that it may, indeed the probability is that it

will, if in sufficient quantity, mechanically excite such irritation as may bring into being two latent elements of disturbance. The first of these is to be regarded in the knowledge that no wounded tissue, once exposed to the air, other than that of the highest mountains, or mid-ocean, is perfectly free from contamination; it probably has lodged in it pus-forming microörganisms deposited by the air, yet in such limited quantity that if further ingress is excluded, and not too much and luxuriant soil provided for their development, the vital resistance of the tissues is able to take care of them. Again, it is not safe surgery to tempt the lonely microörganism in his occasional voyages around the blood-circuit, with large and fertile fields of even sterilized serum, pent up in tissues and cavities of the body. As practical surgeons, we should ever remember that the aspiration or drainage of a hydrops articuli or pleuritic effusion probably saves the patient from a future purulent accumulation, with all of its disastrous attendants. Then tension may, by irritation, convert an accumulation of serum into a dangerous wound-disturbance, calling into activity latent microörganisms which would otherwise have been disposed of by the tissues. Lastly, in this connection must not be forgotten the fact, that primary wound-secretion, though so protected as to be a barren soil for the growth of disturbing agents, may, by its mechanical effects, be fatal to the functional interests of certain wounded structures, notably the brain and cord.

To this, the first part of our query, and one that the idealist in surgery is almost answering in the affirmative, we say "No." I have not dwelt upon the greatly differing conditions that exist between the work of the specialist and that of the general surgeon, or, more properly, the conditions that confront us in accidental surgery in contradistinction to surgery of selection and timely preparation. These differences readily suggest themselves to the practical general surgeon who has to deal almost daily with contused and lacerated wounds, the result of machine or railroad accident, where gross dirt and foreign bodies constitute no small element in determining the necessity for drainage, if good results are to be expected.

The second part of our question: "When shall we drain?" has been anticipated pretty largely in the previous discussion of the necessity for drainage. A proper appreciation of the function of drainage; conditions which surround the wound and manner of infliction; the perfectness of our appliances, and the constitution of the patient will be the chief determining factors. The axiom in abdominal surgery, "When in doubt, drain," is a most excellent one in general surgical practice, unless, like some surgeons I have known in abdominal work, always doubting. Probably we shall best know when to drain by formulating rules when not to drain. If the deeper parts of a wound can be approximated; if pockets and recesses can be obliterated by suture or compression; if the conditions favor natural drainage, dispense with drains. The buried suture will eliminate in a scientific way more drainage-tubes than any measure we are now acquainted with.

How shall we drain? Shall it be by tubular or capillary means? With material of an absorbable kind, or material that can be removed from the wound after its function of drainage has been performed? To answer these questions, let us again think of the purposes of primary drainage, and we shall see that a failure upon the part of the profession to appreciate the best forms of drainage is due to the want of knowledge in its management. If the surgeon knows how to manage drainage when once established, he will not be long in discovering the best material, at least for his own use. As between tubular and capillary drains in other than wounds of cavities of the body, it seems the preference should always be given to those acting by capillarity. With a thorough appreciation of the time required for primary drainage, and a knowledge of how the fluids, blood and serum, escape from wounds, there does not seem a valid reason why rubber tubes or absorbable tubular drains should ever be used. Certainly, when possible, preference should be given to a material the removal of which does not excite disturbance in the wound; also to material that so closely approximates the tissues in its composition as to permit of its softening, liquefaction, and final absorption. Such a substance is found in catgut strands. In large wounds, with free secretion, six or eight threads of large gut, made to traverse the entire deep part of the wound, and projecting from both angles, will drain it more effectually and more certainly than a fenestrated rubber tube of one-third inch in diameter. If there is any difficulty from bowing or fixing just where wanted, the method of Mr. Chiene (in which the strands of gut are tied in a bundle by a strand around the middle, and these with a needle attached sewed into the bottom of the wound) may be practised. Such a drain does not become plugged by blood-clot, and by virtue of its capillary action it will decant fluids from the bottom of pockets when a tubular drain would not. It is painless, for it does not produce compression; it does not soften too soon—*i. e.*, before its function is fulfilled. No dressings have to be disturbed for its removal. It lessens the paraphernalia of the surgical outfit, and is thus an element of simplicity, which, in turn, is one of the greatest elements of safety in surgical practice. The same bottle may contain the materials with which you tie the bleeding vessel, make your drain, approximate the wounded

surfaces, and which you again use as buried suture to prevent drainage. The size of the gut used, as well as the number of strands, should be proportioned to the size of the wound to be drained.

If there is troublesome parenchymatous hemorrhage, or oozing from a large denuded surface, and it is desirable to combine drainage and hemostasis in the same measure, strips of iodoform-gauze form the best method of primary drainage. In all other surgery, with the exception of the cavities of the body, the catgut strands are to be preferred.

SUMMARY.

1. The principle of artificial drainage in surgery, while very ancient, was imperfectly understood, and was oftentimes as much a factor for evil as for good.

2. Though our knowledge of the principles that govern a healthy regeneration of wounded structures has greatly advanced, and our progress in wound-therapeutics has kept pace, we fail to appreciate how artificial drainage can be altogether dispensed with in surgical practice.

3. To lessen the use of artificial drainage it is necessary to thoroughly apply the principles of asepsis and antisepsis, combined with buried sutures, fixation, and alimentary or systemic drainage.

4. If for any reason the exudation of serum cannot be controlled, its removal by drainage is a safer surgical measure than any attempt at sterilization *in situ*.

5. The time required for primary drainage is from twenty-four to sixty hours; to wait longer is to encourage trouble; to remove sooner than twenty-four hours is to take unwarranted risks.

6. Capillary drainage is to be preferred to tubular drainage in wounds other than those of the large cavities. For this purpose absorbable material should be selected, catgut being the best.

7. When it is desirable to combine hemostasis and drainage in the same measure, the strips of iodoform-gauze, as recommended by Mikulicz, fulfil a most useful purpose.

8. When natural drainage can be utilized without producing unsightly cicatrices, artificial drainage should be dispensed with; when feasible, the two should be combined.

9. Wounds involving the brain and cord had best be drained, to avoid mechanical violence to the function of delicate structures by retained serum.

10. Necessity for artificial drainage will most often arise in wounds invading the large cavities; herein flexible, tubular, glass drains best meet the requirements, aided or not by materials acting by capillarity.

11. The method of secondary suture after primary wound-secretion is over, advised by Kocher, seems to possess no advantage over drains that have to be removed, and certainly is not to be compared in convenience, comfort, etc., with the patient, to absorbable capillary drains.

A Tribute to Villemin.—The Leconte Prize of $10,000 has been awarded to the heirs of the late Professor Villemin by the Paris Academy of Sciences, for his researches on the infectiousness of tuberculosis.

ORIGINAL LECTURES.

HYSTERICAL SINGULTUS.[1]

BY PROF. CHARLES G. STOCKTON,
PROFESSOR OF THE PRACTICE OF MEDICINE, BUFFALO UNIVERSITY.

THE patient, Bertha W., nineteen years of age, is an unmarried German girl, a servant, of good family history. She came to this country eighteen months ago. She had had no previous illness. Two weeks ago her brother died of diphtheria. She began feeling ill five days ago and commenced hiccoughing; this has been kept up continuously ever since, in spite of the remedies of three physicians who attended her before she entered the hospital. She has not vomited, nor has she eaten anything since admission, two days ago. There has been intense headache since the hiccough commenced. The bowels are habitually constipated. She was given a high enema, containing ten grains of ox-gall, and has had twice daily and twice each night high enemata of mistura asafetida, ℥vj. Morphine has been administered in doses of gr. ¼, increased to gr. ½, and repeated as soon as the hiccough would begin again. Last night she slept four or five hours without hiccoughing, but began again as soon as she awoke. To-day she has taken a little milk.

This affection is a form of neurosis, technically known as singultus. The elements of hysteria seem to be present, and, in the disturbed state of her nervous system, it is easy to understand that from the excitement of the serious illness and death of her brother, some manifestation of hysteria might be established. You will ask me if singultus is not always a nervous disturbance, and it will be well to discuss that question briefly before entering on a minute study of this case. Hiccough is not a cough; it is quite the opposite. In coughing there is a violent expulsive effort on the part of the lungs, with a sudden partial or complete closure of the glottis. Singultus is a sudden inspiration by a spasmodic contraction of the diaphragm, with partial or complete closure of the glottis, giving rise to a peculiar gulping sound. Undoubtedly at times the glottis closes completely with a sharp sound, while at other times it is partly closed. I think it is due to the varying tension of the vocal cords that we have the different degrees and qualities of the sound.

Leaving out of consideration the ultimate causes, let us study the method in which singultus is produced. The diaphragm is innervated by the phrenic nerve, which springs from the fourth and fifth cervical. It is a mixed nerve, having both motor and sensory fibers, and it receives branches from the sympathetic. After passing over the lung and through the mediastinum it spreads out over the diaphragm and communicates with the solar and splanchnic plexuses. It is open to influences in a variety of ways, both through the cerebro-spinal and the sympathetic systems.

Hiccough may be produced by spinal or central nervous diseases; it may occur in ascending myelitis, in an uncontrollable form and often being the last of the patient's symptoms. Cerebral irritation, as by a tumor, or irritation along the course of the nerve, by the pressure of medias-

[1] Delivered at the Buffalo General Hospital.

tinal tumors, abscesses, enlarged lymph-nodes, effusion in the pleural cavities or pericardium—any of these things may also cause singultus. Irritation of the esophagus may be communicated to the phrenic, and thus hiccough is frequently set up by the effort at swallowing dry substances. Diaphragmatic pleurisy or subdiaphragmatic abscess may also be attended by singultus. Gastric diseases, often mild forms of indigestion, may give rise to hiccough, on account of the communication of the phrenic with branches from the solar plexus, which supplies the stomach. As the innervation of the various abdominal organs is more or less connected, irritation of almost any of these organs may cause singultus. Finally, we may have hiccough entirely as a reflex from uterine disease, spinal irritation, disease of the urethra, etc., just as asthma may be produced from disease of the nose and other remote lesions.

Singultus frequently comes on in certain conditions of nervous excitability of the nervous system. Children are very prone to hiccough, and mothers are accustomed to overcome this symptom in babies by giving a teaspoonful of cold water, or a few grains of sugar, to stimulate a reflex by the act of swallowing. Almost any reflex spasm usually serves to stop a hiccough, for it is a curious fact that one spasm may be overcome by establishing another. The vegetative nerves are extremely active in children, and all reflex and spasmodic phenomena are more often seen in children than in adults, whose nervous systems should have become more composed and developed. When, from any cause, the nervous system becomes perverted and over-susceptible, then reflexes and spasmodic states are more easily developed. A man, for instance, who has overtaxed his nervous system by any form of dissipation has more easily excited reflexes, and you all know how common hiccough is in drunkards. Overwork, loss of sleep, long-continued watching or anxiety are also predisposing causes of this kind of nervous phenomena. Acute illness also greatly strains the nervous system, and any such reflex spasm as hiccoughing is more easily set up and is controlled with more difficulty than when it occurs in the healthy individual. Among the most common general condition that predisposes to hiccough is hysteria, and in such a case the hiccough may become a symptom of so great importance as to constitute essentially a disease.

Here we have a young German girl who has lived for several months amid unfamiliar scenes, and among people speaking a strange language, who has been excited and exhausted by the sickness and death of her brother. You can readily understand the predisposition to some form of spasmodic trouble. You can also understand how the hiccoughing once set up would tend to continue, and how it would wear out the patient's strength, and render nourishment difficult, if not imposible. By gradually weakening the heart, even hiccough may put an end to life, and the condition in this instance has been considered so serious by several physicians that, after doing their best to improve the girl's condition in her lodgings,they have sent her to the hospital, in order to have everything possible done for her.

While I have been talking you have noticed the continual hiccough. You may not have noticed that the color of her hands was improving, and now, on feeling her pulse, I find it has become stronger, probably because appearing before you has excited her and stimulated her circulation, and partially counteracted the effect of the morphine. A careful examination of the reflexes is impossible, as she holds the legs firmly, and is evidently too much excited to relax her muscles. At several points on the face, hands and feet there is insensibility to the prick of a pin. When she entered the hospital several anesthetic areas were noticed on the left side, and the left conjunctiva was also anesthetic.

The treatment should be directed to control the spasm, and meanwhile to control the hysteria. For the latter I do not think there is any one drug that will compare with asafetida for controlling the symptoms, or, in fact, the disease itself. In any case of hysteria I advise giving asafetida in large doses. The officinal five-grain pill is perfectly useless. The mixture, or milk, should be given by the mouth, an ounce every hour, extending the interval to two hours, when the effect is noticed, and gradually extending to an ounce every four hours. This treatment should be maintained for a month or more. If the patient cannot, or will not, take asafetida by the mouth, give it by the rectum. It is in this way that this patient is being treated, with the object of controlling both the symptom of singultus and the hysteria.

Meanwhile, we must insure her rest, even at the expense of giving her large doses of morphine. Nourishment must be pushed as far as possible, realizing the difficulty of doing so in persons partially under the influence of morphine, and especially when swallowing is as difficult as it is in this case. Alcoholic stimulants may also be given with benefit. If not succeeding with morphine, one may add atropine, $\frac{1}{100}$ grain doses. Sometimes camphor in large doses will control hiccough when other remedies fail. Amyl nitrite, nitroglycerin, chloroform, or ether, are sometimes efficient. Musk has been largely used, and has been said to be a specific for hiccough, but it is nothing of the kind. Few druggists keep it, on account of the expense, and it is likely to be sophisticated. From ten to thirty grains of good Siberian musk would cost ten or fifteen dollars, and to saturate the system thoroughly with it would be more expensive than the "bichlorid of gold" cure. It is a good medicine, but its success is by no means so phenomenal as the textbooks would lead us to think. Castor is also good in the same way as musk and valerian and others of the same class. Asafetida is just as good, is much less expensive, and is not so offensive to smell as musk.

There are other contrivances for the treatment of singultus aside from drugs and foods. Sir Morell Mackenzie has said that if sneezing can be established in a person suffering from hiccough, relief can be obtained. Yesterday I tried to make this girl sneeze, without success. Her nose was tickled, she was given snuff—and she understood snuffing thoroughly, and filled both nostrils well—but without effect. I dare say there is some way of making her sneeze, and before we are done with the treatment we shall try the experiment again. I have no doubt that if we could only make the patient sneeze we could temporarily control the hiccough in the same way that a mother controls it in her baby, by setting up a reflex swallowing by means of water or a little dry sugar. You may ask why I do not attempt choking the

girl by passing the stomach-tube. That might be worth while; but I doubt if it would control permanently such severe hiccough. Faradism may be tried, passing the current through the diaphragm, and causing a tonic spasm of that muscle, which would control the clonic spasm of hiccoughing, at least temporarily. Others have a way of making strong pressure over the diaphragm with the hands clasped just beneath the ensiform cartilage, or pushing the hands up under the ribs, or by compressing the chest with a rubber bandage. The alternate hot and cold douche may sometimes be used with good effect. The actual cautery or other powerful counter-irritation over the pit of the stomach may afford relief. But all these measures are not sufficient for extreme cases. About the only practical treatment, then, for them is to give some drug that will keep the patient still, and some other drug that will stimulate and support the nervous system while waiting for Nature to do that something which will control the spasm of the nerve.

CLINIC HELD ONE WEEK LATER.

Here is the patient who was presented to you last week with singultus. She now makes—for your benefit—a little motion suggesting hiccough, but this is the only evidence of the trouble that I have seen for several days. I suppose the suggestion of coming before you has been quite enough to develop it. The treatment has been the use of asafetida, and, instead of the morphine which I suggested to you, I changed to chloral the same day on which you saw the patient, because the effect of the morphine given the night before the clinic had not been pronounced. At the suggestion of Prof. Cary, a little measure has been used which has stopped the spasm temporarily on more than one occasion: this was the injection of ice-water in the region of the diaphragm.

BRACHIAL PALSY FROM FRACTURE OF THE CLAVICLE—ISCHIO-RECTAL ABSCESS.[1]

BY THOMAS H. MANLEY, M.D.,
OF NEW YORK.

THE first case to be operated on is one of an unusual description, interesting in many important particulars.

The history is briefly this: The patient always enjoyed good health until two months previously, when, while on a debauch, he sustained a fall on his left shoulder, and immediately noticed that the left arm was powerless. Believing that he had a severe injury, his friends brought him to the out-door department of Harlem Hospital, where it was discovered that he had a fracture of the clavicle near its acromial extremity. The fracture was adjusted, and the man was told to come in again, after some days; but he failed to return as requested, though he put in an appearance after six weeks, when the arm related to the fractured bone was found entirely paralyzed. He said that the day after his shoulder was dressed he tore away the bandages and went to work, and had little inconvenience for four weeks, when the arm commenced to be painful and weak, and, in a while, was entirely helpless.

[1] Clinical lecture delivered at Harlem Hospital, New York.

Now, the question arises, What is the nature of the paralysis? Is it central or peripheral, primary or traumatic? The first proposition may, for many clear and obvious reasons, be readily eliminated. Bearing in mind the fact that the treatment of the fracture was totally neglected, its situation, the marked displacement of the fragments, with the large mass of osseous proliferation and callus, it is clearly evident that the marked muscular atrophy and motor palsy are wholly attributable to mechanical pressure—a condition not unlike what we may see in cases of osteo-sarcoma springing from the upper free surface of the first rib, at the part over which pass the neural and vascular supplies to the arm. We have, then, a compression of the tubular structures and nerves by excessive formation of a vicious callus.

The cause of the trouble being apparent, the next question that arises is, How shall it be dealt with? In the present instance, as the extent of deformity is so great and as the trophic changes in the soft parts are so marked, the rationale of treatment is clear, viz.: cut down, chisel away the excess of callus, re-fracture the bone with an osteotome, and so adjust the fragments as to aid in the full functional restoration of the shoulder and remove all pressure.

Though the indications are clear for surgical interference, their execution is full of difficulty and danger. When it is borne in mind that at this point the inferior surface of the clavicle is practically a part of the superior and anterior boundary of the pleural cavity; that the bone lies immediately over the brachial plexus and the subclavian artery and vein, it is at once apparent that we must proceed with skill and caution, so as not to infect the pleural cavity or wound those great blood-trunks which, in this situation, closely hug the bone.

I intend to make a long free incision over the long axis of the bone, and by keeping close to the new bone-formation, after stripping away the insertions of the subclavius and pectoralis major, avoid inflicting damage upon adjacent parts. This having been accomplished, with a sharp, strong, osteotome the callus is excised, when the sharply-cutting convex ends of the united fragments are raised on a strong periosteum-elevator, sawed in two with a metacarpal saw, and sufficiently gnawed away with the rongeur to permit the ends to come together without strain or pressure. Now, a small wire suture is passed through the ends of the bone and fixed. The wound is closed without drainage.

The next patient is a young man of twenty-three years, with a tuberculous history, who is suffering from an ischio-rectal abscess.

This young man has been sent for treatment for piles: it is quite certain that there is some type of hemorrhoidal disease, but the general condition and local examination betokens something else. The patient has a large pus-accumulation, evidently of hemorrhoidal origin; the pile first becoming inflamed, then suppurative changes occurring and making their way through the walls of the bowel into the loose cellular tissues. In connection with operative procedures, the question arises as to how we should deal with these cases to the best advantage.

Should we be content with making a free incision and draining away the pus, or should we search for the opening in the rectum, and do, at one sitting, the combined

operation of evacuating the pus and splitting up the fistula? Much may be said for and against either procedure, but my preference in all cases of this kind is to be content with making an opening into the abscess. My reasons for this are that if the internal opening is high up, by division of both sphincters incontinence of feces may follow, or, what is very common in cases of strumous rectal fistulæ after operation, we may have great difficulty in healing the wound made, and it scarcely closes before another fistula appears. And I may say here that, should an anal fistula follow, I shall, with him, pursue my common rule with this class of cases—viz., if it gives rise to no pain or serious inconvenience, I shall let it alone.

P. S.—The operation in the first of the above cases was followed by the most satisfactory results. There was no surgical fever, no hemorrhage, no pleurisy, and in two weeks the patient left the hospital with full functional restoration in the arm and hand.

The patient with the abscess left the hospital with a small painless anal fistula.

CLINICAL MEMORANDA.

SYMPHYSIOTOMY IN PRIVATE PRACTICE.

BY HARRY MCKENNAN, M.D.,
OF PARIS, ILL.

THE report of the following case of symphysiotomy is of interest from the fact that the operation is a new one to American obstetricians (this being the fourth recorded case in America), and because it occurred in private practice, in a small house of two dingy rooms, where there were no conveniences and but few necessary comforts.

Mrs. S., thirty-one years old, 4½ feet tall, of an average weight of 102 pounds, and with an antero-posterior pelvic diameter of 2¾ inches, had been delivered twice previously, and each time of a dead child, craniotomy having been necessary.

On the night of December 15, 1892, at about 11 o'clock, the patient began to have labor-pains. Eight hours afterward I was called. Upon examination I found the os well dilated, the membranes ruptured, and the cord prolapsed. The head could be reached by my finger, but on account of the small pelvic inlet, it could not be made to engage. The cord was returned, and Dr. Z. T. Baum (who had been present at her two previous confinements) was called. Symphysiotomy was decided upon, and Dr. W. H. Ten Broek was asked to assist in the operation. At 10.30 A.M. the pubes was shaved, and the parts thoroughly washed, first with soap and water, and afterward with a solution of mercuric chlorid 1 to 2000. Chloroform was given and the operation was begun.

An incision was made over the symphysis, and the attachments of the recti muscles were divided sufficiently to allow my forefinger to pass under the symphysis. A strong probe-pointed bistoury was then introduced, but, to my disappointment, I found that the union between the pubic bones was too firm to be overcome by such a knife; and I was compelled to lay it aside, and make use of a narrow probe-pointed metacarpal saw. (I had ordered of the instrument-maker a Galbiati's knife, but it reached me by mail an hour after the operation had been completed.) The saw worked nicely, however, the point being well guarded by my finger, while an assistant with a catheter in the urethra pressed the soft parts back and to one side. What little débris was caused by the saw-teeth was carefully washed away, and the wound was covered with iodoform-gauze. By the time the symphysis was cut through the child had so changed in position that the head lay in the right iliac fossa, with the left arm protruding its full length through the os, and the cord prolapsed. The cord was returned, the arm replaced, and cephalic version was performed.

Version was easily accomplished, owing to the impossibility of the body or head of the child engaging in the superior strait. As soon as the head was again in position, the forceps was applied, and I then asked Dr. Baum to deliver, which he did very rapidly on account of the prolapsed cord, the pubic bones gaping about three inches. The wound was then thoroughly cleansed with solution of mercuric chlorid 1 to 3000, stitched with silk, and covered with iodoform-gauze held in place by adhesive strips. The hips were bound firmly with a roller. A vaginal douche of mercuric chlorid, 1 to 2000, was given. The knees were tied together, and a tight binder applied. The gauze dressing was accidentally removed by the patient as she was recovering from the anesthesia, and I dusted over the wound boric acid powder one-quarter of an inch in depth, and covered this with a large piece of surgeon's silk isinglass plaster. This last dressing I greatly prefer, as it has the advantage of not only protecting the wound, but of being more easily kept in place, and also of being semi-transparent.

The operation occupied one hour, but could have been accomplished in one-half the time had the saw been used in the beginning, instead of the bistoury. Thirty-six hours after the operation the patient's temperature rose to 101°, but after thoroughly cleansing the parturient tract, and providing her with a more comfortable bed, her fever disappeared, and the temperature has never since been above 99°. A vaginal injection of mercuric chlorid, 1 to 2000, was given once daily until the lochial discharge ceased. The stitches were removed on the fifth day, when the wound was found to be thoroughly healed.

Nearly two weeks elapsed before involution had taken place sufficiently to allow the womb to return to the contracted pelvis. In twenty-eight days the woman was allowed to get up. She suffered no inconvenience, except the general weakness caused by her long confinement in bed. She is now able to be about the house, and expresses herself as feeling as well as ever.

The child, which weighed eight pounds at birth, is well and healthy.

I had never entertained a friendly feeling toward the operation of symphysiotomy until I read the valuable paper of Professor Barton Cooke Hirst,[1] presented to the Philadelphia County Medical Society in October last. The thanks of the profession are due Professor Hirst for making public his admirable paper.

It seems to me that in this country, symphysiotomy should supplant craniotomy, and in private practice it has the advantage over the Cesarean section of being

[1] MEDICAL NEWS, October 15, 1892, p. 431.

less formidable, and offering the mother an equal, if not a better chance for recovery.

OVARIAN CYST WITH INTERNAL HEMORRHAGE; OPERATION; RECOVERY.

BY H. C. MASLAND, M.D.,
OF PHILADELPHIA.

THE case here reported came under my observation while resident physician at the Wilkes-Barre City Hospital. Because of its complication it seems worthy of mention among reported cases of ovariotomy. I am indebted to Dr. J. A. Murphy for his courtesy in permitting this publication.

Mrs. M., thirty-seven years old, has borne ten children. She states that she has had fever after the birth of four of them. Following the birth of her last child, four months before admission to the hospital, she had chills and fever. Since the birth of the last child she has noticed herself gradually growing larger, without troublesome symptoms, till Friday evening, January 22, 1892, when she was seized with sharp pain in the left side, spreading thence over the abdomen. There was at the same time marked prostration, irritable stomach, chills, fever, extreme thirst. There was a feeling of great distention and a sensation as though something had ruptured.

The woman was admitted to the hospital on the following Monday. On admission she complained of sharp pain in the left side. The breathing was rapid and labored; the pulse frequent and weak; the temperature 101°. There was excessive thirst, but nothing could be retained by the stomach.

On the following day abdominal section was performed by Dr. Murphy. The tumor proved to be, as diagnosticated, a large ovarian cyst. There were numerous slight adhesions to the abdominal wall that were easily broken up. The pedicle was small and was ligated with comparative ease. The operation was performed with the strictest aseptic precautions. No drainage-tube was used.

The ether was administered for an hour and fifteen minutes. Prior to its administration a hypodermatic injection of strychnine was given. Whiskey and digitalis were each injected once during the course of the operation.

At the commencement of the anesthetization the pulse was 146 in the minute, the temperature 102°. Throughout the operation the general condition, if at all changed, was somewhat improved. At the close of the operation the temperature was 101.6°, the pulse 128.

The tumor weighed about thirty pounds. On examination, its inner surface was found covered with a layer of coagulated blood. This hemorrhage into the sac, it was believed, accounted for the acute symptoms of the previous Friday evening.

The patient reacted well and progressed steadily to perfect health. The bowels, inclined to be constipated, moved freely after the administration of salts. Catheterization was also necessary for a few days following the operation.

Union took place by primary intention. The patient was discharged eighteen days after the operation.

This case was especially interesting to those who witnessed the operation because of the internal hemorrhage. Prof. Goodell[1] speaks of hemorrhage within the sac as an occasional accident, with consequent septicemia if not immediately operated upon, operation being the sole chance of life.

In this case the clot was well formed, had undergone contraction and was firmly adherent to the cyst-wall. The serum of the blood was intimately mixed with the ovarian fluid. There was no evidence of any destructive change in progress.

In this case it appeared that had the circumstances been favorable, the clot might have gone on to complete organization.

2027 ALLEGHENY AVENUE.

MEDICAL PROGRESS.

Cerebral Anthrax.—MERKEL (*Münchener medicin. Wochenschr.*, 1892, No. 47, p. 840) has reported the case of a whitewasher, twenty-two years old, who for three or four days had behaved peculiarly and had vomiting and diarrhea, with pain in the sacral region. The man complained of a feeling of fatigue and of vertigo, and presented a lead-line at the margin of the gums. At the lower part of the posterior aspect of the right chest there was a small area of impaired percussion-resonance, with fine moist râles. The man fainted during the examination, and was evidently quite ill. The temperature was 103.1°. On the following morning the patient became unconscious. In the afternoon he had several epileptiform seizures, and the breathing assumed the Cheyne-Stokes character. In the right eye-ground the margins of the papilla were obscure, and there was a slight staphyloma. The urine was passed involuntarily; a small quantity, obtained by means of the catheter, contained hyaline and granular casts and vesical epithelium. The loss of consciousness persisted, until the man died in the night of the same day. At the post-mortem examination a packet of glands, about as large as a small apple, was found in the posterior mediastinum. The mass was surrounded by a fibrous capsule, and on section was seen to include a number of nodules of various size, each provided with its own capsule. The spleen was considerably enlarged; its capsule shrunken. The stomach was injected and presented numerous small superficial hemorrhages. The intestines were likewise injected, and the solitary follicles were slightly swollen. The dura mater was pale and translucent. The pia was quite injected, easily removable, and somewhat turbid; beneath the pia the sulci in various situations were filled with a gelatinous material; the convolutions were somewhat flattened. The ventricles were slightly dilated and contained a few ounces of clear serous fluid. On section, the cortical tissue appeared pale, though in places containing numerous small red points, apparently hemorrhagic. Sections of the ganglia and of the cerebellum disclosed the presence of similar points, which occupied especially the gray matter. Upon agar inoculated with fluid expressed from the spleen, anthrax-bacilli developed. Similar organisms were found in sections of the hardened brain, spleen,

[1] Lessons in Gynecology, 3d ed., p. 432.

and mass of glands from the mediastinum. In the spleen and mediastinal glands the bacilli were irregularly distributed among the cells, and only in few places in large numbers. In the brain most of the vessels were filled with bacilli. In some places the organisms had escaped from the vessels into the surrounding tissues; in other places they lay in the midst of extravasations of blood. The source of infection could not be determined. It was only known that the patient had in his daily work handled bristle brushes. The thought is suggested that the germs may have entered by the respiratory or gastro-intestinal tract.

Hemorrhagic Goiter in the Course of Pregnancy.—ESTOR and CADILHAC (*Nouv. Montpellier Médical*, 1892, No. 6, p. 758) have reported the case of a woman, thirty years old, in the sixth month of pregnancy, from the beginning of which an enlargement of the neck which had been present for eight or nine years, slowly and progressively increasing in size, had undergone great increase. For nine days there had been constant hemorrhage from two small ulcerated points on the most prominent part of the tumor. The bleeding had at first been rather profuse, but subsequently it became much less, but continuous. The woman had become quite weak, anemic, and cachectic, and complained of vertigo and palpitation of the heart. The sounds of the heart were duplicated, and at the apex a faint blowing murmur could be heard. From the size of the tumor, its irregularity of surface and consistence, the condition and appearance of the patient, and all of the attendant circumstances, it was thought that the condition was one of telangiectatic sarcoma of the thyroid gland, but the subsequent course of the case proved the diagnosis to be incorrect. It was determined to remove the gland. The operation was an extremely bloody one, and the mass was removed only in part. Three days after the operation the woman aborted with a six months' child. The wound united rather tardily, but the patient ultimately made a satisfactory recovery. Ten months after the operation she was perfectly well.

A Complicated Labor.—KOETTNITZ (*Deutsche medicin. Wochenschr.*, 1892, No. 45, p. 1012) has reported the case of a woman, forty-three years old, one of a family of twelve, whose mother had once borne twins, who had herself twice borne twins, and was pregnant for the eleventh time. In the labor one child had been delivered by a midwife, but the further progress of the case was checked by the presentation of two feet, one hand, and a portion of a head, so that the possibility of triplets was considered. All efforts to turn were futile. After the child had died, craniotomy was performed. With some difficulty the second child was extracted. It appeared that the child must have presented by the feet, the lower extremities being extended and the pelvis high up in the uterus. The woman made a good recovery.

The Predisposition to Tuberculosis.—FERMI and SALSANO (*Centralbl. f. Bakteriol. u. Parasitenk.*, xii, 21, p. 750) have made an experimental study to determine the conditions that increase the predisposition to tuberculosis, as well as those that increase the virulence of the tubercle-bacilli. They found that by exposure for several weeks to a temperature of from 91° to 95°, especially if the surrounding air were saturated with moisture; further, by the injection of grape-sugar and lactic acid, guinea-pigs and mice could be rendered susceptible to the tuberculosis of fowls, and mice to the tuberculosis of mammals. The tuberculosis of fowls could be made virulent for guinea-pigs by repeated inoculation of animals rendered susceptible.

THERAPEUTIC NOTES.

Salol Subcutaneously in the Treatment of Pulmonary Tuberculosis.—GROSSI (*Rif. Med.*, Oct. 31; *Brit. Med. Journ.*, No. 1665, Epitome p. 87) has reported the employment subcutaneously of salol in eleven cases of pulmonary tuberculosis at various stages. The drug was dissolved in oil of sweet almonds in the proportion of one to three. At first the equivalent of twenty-five grains of salol was injected daily; after a little while the dose was increased by twelve and a half grains every second day until seventy-five grains were being injected in three equal doses. The injections were made in the gluteal region, and caused neither pain nor reaction; when swelling occurred the injections were for a time omitted. Cod-liver oil was employed as an excipient, but was abandoned because it gave rise to local inflammation, which, however, it is thought may have been due to impurity of the oil. In all of the cases but one, in which the disease was far advanced, the treatment was followed by good results; fever and night-sweats ceased, cough was relieved, the number of bacilli in the sputum diminished, the patients gained strength, and the weight increased.

For Chancroids.—CAVAZZANI (*Giorn. Ital. della Malat. Vener. e della Pelle*, fasc. 2; *Monatsh. f. prakt. Derm.*, xv, 11, 1892, p. 586) recommends the following combination as a topical application in the treatment of chancroid:

℞.—Chloral. hydrat. . . .	ʒijss.
Camphoræ rosæ . . .	ʒjss.
Glycerin. neutral. . . .	℥jss.—M.

S.—The camphor and the chloral are rubbed up in a mortar to a transparent fluid; then the glycerin is gradually added, and the whole is heated over a water-bath at a temperature of from 122° to 140°. The preparation should be recent. The application is made morning and evening by means of a glass rod, after the ulcer has been cleaned, and a covering of cotton is finally applied.

The Creasote-treatment of Pulmonary Tuberculosis —From the results obtained at the Hospital Moabit, at Berlin, from the employment of creasote in the treatment of pulmonary tuberculosis during a period of almost five years, ALBU (*Berliner klin. Wochenschr.*, 1892, No. 51, p. 1300) arrives at the conclusion that the agent exercises no direct influence upon the tuberculous process in the lungs, although it is admitted that it is a useful remedy in the symptomatic treatment of the disease—probably better than any other. In most cases it acts as a good expectorant; in some cases as a stomachic; as a rule, it appears to exercise a tonic influence. In a series of experimental investigations it was found that no change in the virulence of the sputum manifested itself in persons that were taking creasote in full doses.

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THE DEGENERATION AND REGENERATION OF NERVES.

THE study of the changes that take place in a peripheral nerve, after severance of its connection with the nerve-centers, is one interesting alike to the physiologist, the neurologist, and the surgeon. The literature on the subject is voluminous, that of the experimental work alone dating back over 100 years; and there have always been wide differences of opinion with regard to the explanation of many of the processes, numerous points even yet remaining obscure. That the two ends of a divided nerve can unite was established early in the history of medicine, but with CRUIKSHANK and HAIGHTON, in 1795, began the study of the question of a return of function after union, and the histologic changes upon which such a return might depend.

It would take us too long to review at all carefully the results of the various experim enters. Suffice it to say, that it has been demonstrated that a spinal nerve can, after section, reunite and again become capable of performing its functions; and more, that the peripheral end of one spinal nerve can unite with the central end of another, and function return. It has not yet been proven, however, that a pure motor trunk can unite with a pure sensory trunk, with return of functional activity in the peripheral portion. The ingenious experiments of SCHIFF, REICHERT, PHILIPPEAU, and VULPIAN, on the lingual and hypoglossal, and on the vagus and hypoglossal nerves, seemed at first to be positive; but, as HEIDENHAIN and others have shown, the interpretations that they have given of their results cannot, on closer examination, be regarded as satisfactory.

With reference to the degenerative changes that occur after section there has been much discussion, and the view of WALLER that the peripheral portion of a nerve undergoes complete degeneration has been many times challenged. There is a certain amount of evidence, chiefly clinical it is true, in support of the statement that union may take place *per primam intentionem*, with almost immediate restoration of function; and, indeed, had others been able to confirm the experiments of GLUCK on the sciatic nerve of the fowl, or had he controlled his work by histologic examinations, we should have had to believe in the possibility of primary healing. But the weight of testimony is against this, and if we grant, as do nearly all modern writers, that union does not take place in this way, the views with regard to the regeneration of the nerve may be divided into three groups. According to that of NEUMANN, supported by EICHHORST and MAYER, the old myelin and axis break down completely in the peripheral end, and lie in the old sheath, regeneration being brought about by a differentiation of this broken-down material into a new axis and a new myelin, the new formation taking place discontinuously, but appearing first near the central end, and progressing toward the periphery. The second view is based on the theory that the axis-cylinder persists throughout the peripheral degeneration. WOLBERG believed that connection was established between the axis-cylinders of the central and peripheral ends by the formation in the intervening cicatricial tissue of entirely new fibers from the round or oval cells of the perineurium.

The ideas which have met with general acceptance, however, are those of WALLER and RANVIER, who assert that there is always a destruction of both axis and myelin in the peripheral portion, the new axis being formed by an outgrowth of the axis-cylinder of the central end. LEEGAARD, writing in 1880, maintained that the axis developed anew in the peripheral end, and became connected secondarily with that of the central end. Incidentally, it may be mentioned here that BENECKE and KÖLLIKER

have shown that the nuclei of the sheath play an important part in the development of the new myelin.

The whole subject has been recently taken up anew by HOWELL and HUBER,[1] in this country, who, after a careful review of the literature, describe their physiologic and histologic experiments, and the results obtained. The technique observed was essentially modern, and in many ways both original and ingenious. We are sorry that, on account of lack of space, we shall have to be satisfied with an epitome of their conclusions.

These writers find that, after division, a nerve never unjtes by first intention, but, as the histologic examination shows, undergoes complete degeneration in its peripheral end, segmentation of the myelin and axis occurring first at the intersegmental lines. After the first four days, there is entire loss of peripheral irritability, the gradual return of irritability and conductivity being delayed until about the twenty-first day. The sensory recover their function earlier, as a rule, than the motor nerves.

Arranging the histologic changes in the order of their sequence, there is, (1) following the segmentation of the myelin and axis, a proliferation and migration of the internodal nuclei; (2) a further disintegration and absorption of myelin and axis, associated with an increase in the amount of protoplasm about the nuclei. This soon results in (3) the formation of a continuous protoplasmic band, which lies in the old sheath; (4) a differentiation of the periphery of this band gives rise to a new sheath, when what is known as an "embryonic fiber" is complete, a structure which, while it contains neither myelin nor axis, is capable, after union with a similar protoplasmic outgrowth from the central end of the nerve, of carrying volitional impulses, though incapable of electrical stimulation. To the early development of such fibers we are probably to look for the explanation of those cases of rapid union after section which the surgeons report. (5) The new myelin next begins to appear in the peripheral end, first in isolated drops in the neighborborhood of the nuclei, and later, by a fusion of the drops; a continuous tube of myelin is thus formed. (6) Everything by this time being in readiness, the outgrowth of the new axis-cylinder from the central end rapidly follows, the superfluous nuclei slowly disappear, and the restitution is soon complete.

[1] Journal of Physiology, 1892, vol. xiii, p. 335.

The illustrations that accompany HOWELL and HUBER'S article make clear the successive alterations in the nerve better than any written description could do.

After such thorough work we can easily pardon the writers for indulging in a certain amount of speculation, especially as they have not allowed this to go further than the results of their researches would seem to warrant. But whether the nutrition of each internode is actually dependent upon the regular functioning of the internodal nucleus, and whether the latter is guided in its rule over metabolism by trophic impulses received from the nerve-centers through the axis-cylinder, are questions the answers to which, however probable the solution now proposed may seem, we must postpone until our knowledge concerning such obscure processes becomes clearer.

DIABETIC COMA.

THE subject of diabetic coma has always attracted much attention from both clinicians and physiologic chemists. While, however, much has been done to increase our knowledge of the causation of this particular accident of the diabetic, it cannot be said that the ultimate cause of its appearance has as yet been entirely determined.

The view that acetone is the sole factor in its production has been proven false, this substance being found in the urine of patients other than diabetics, and in that of perfectly normal individuals, while SQUIRE has found it in the blood of patients with neither diabetes nor coma. There is more reason in the view that diacetic acid is the toxic substance, although this also has been found in those without diabetes. MINKOWSKI urges the view that β-oxybutyric acid is the toxic material, and has probably advanced one step nearer to the truth, as the substance named has been found in both the blood and urine of sufferers from diabetes. That one or the other, or both, of the last-named substances have at least much to do with the development of the coma is rendered likely by two circumstances—the similarity between diabetic coma and the symptoms of acid-intoxication experimentally produced in animals, and the results of intra-venous injection of an alkaline solution for the relief of the former. To be sure, the amount of benefit derived from this injection is much less than was at one time anticipated, but, so far as it goes, it proves that at least a lessening of the depth of the coma can in some cases be

caused by artificially increasing the alkalinity of the blood. In favor of the view that β-oxybutyric acid is at least a large factor in its production are the facts that diabetic coma is extremely likely to follow prolonged or excessive muscular exertion, and that β-oxybutyric acid is very closely related to the lactic acid of muscular tissue.

LEPINE and HUGOUNENQ in 1887 practised intra venous injection of a solution of sodium bicarbonate in a case suffering from diabetic coma, in whose urine and blood β oxybutyric acid was found in corresponding quantities prior to the injection. After the injection improvement occurred, and, although death ultimately took place, the β-oxybutyric acid was found to have disappeared from the urine.

It would seem, therefore, that acetone plays no important part in the production of diabetic coma; and this conclusion is borne out by the experimental injections of acetone made by ALBERTONI. The importance of diacetic acid and β-oxybutyric acid is clearly proven by the diminution (although in most cases but temporary) of the coma after the intravenous injection of alkaline solutions. That the acidity dependent upon one or both of these acids does not represent the total toxicity of the blood is shown by the fact that this improvement is, in the vast majority of reported cases, merely temporary. There must, therefore, be still another toxic element acting.

The foregoing statements are well confirmed by the report of a case by ROQUE, DEVIC, and HUGOUNENQ, in the *Revue de Médecine* of December 10, 1892. Although extremely interesting from every point of view, the report may be said to be especially valuable for the chemical and experimental work performed with the blood. The patient was admitted to the Hôtel-Dieu in partial coma, and with a history of six days of premonitory symptoms. Sugar was found in the urine. The patient was bled to the extent of 300 grams, and 20 grams of sodium bicarbonate were administered before the occurrence of death—thirteen hours after admission. In this case, as in so many others reported, improvement followed the injection. Neither in the blood nor in the urine could β-oxybutyric acid be found. The alkalinity of the blood withdrawn prior to the injection showed, however, that its alkalinity was but 50 per cent. of the normal. By the addition of sodium bicarbonate to a portion of the blood its alkalinity was increased to the normal amount. Eight cubic centimeters of the unalkalinized blood were injected into a vein of a rabbit and produced death, preceded by convulsions; whereas twenty-three cubic centimeters of the alkalinized portion were injected in a rabbit of similar weight before death occurred. In the latter case, moreover, neither were the respirations so rapid nor the convulsions so severe as in the animal killed by the unchanged blood. In other words, the unalkalinized blood was about three times as toxic as was that to which the sodium bicarbonate had been added. In spite, however, of this diminution in toxicity, the blood was still capable of producing the death of the second animal also. In this case there was, therefore, present in the blood some acid poison, the nature of which was not determined, and the toxicity of which was not entirely neutralized by the addition of the alkali. Until the discovery of the character of this substance, not wholly dependent upon its acidity for its toxic property, our best means of combating this most grave symptom of diabetes consists in the intra-venous injection of alkaline solutions. That in the vast majority of cases disappointment follows its use, and that the improvement seen in some cases is merely temporary, should not debar us from persisting in the employment of such a measure, founded, as it certainly is, upon rational grounds and capable of ameliorating for a time this dangerous symptom against which we have no other more certain means.

EDITORIAL COMMENTS.

Audi Alteram Partem.—We were under the impression that in representing the sentiment of the medical profession as being unqualifiedly opposed to the unrestricted sale of patent medicines (we mean plain, every-day quack preparations, like "Hood's Sarsaparilla," "Jayne's Expectorant," "Winslow's Soothing Syrup," and the like), and to counter-prescribing by druggists ignorant of diagnosis, we voiced the unanimous opinion of physicians. It seems, however, that we were mistaken, and in a spirit of fair play we quote from an address entitled "The Physiology of a Menu," delivered before the Alumni Association of the Philadelphia College of Pharmacy by a prominent physician of Philadelphia (*The P. C. of P. Alumni Report*, January, 1893, p. 81), the following remarks:

"My student-hearers will learn, before long, about some of the questions that arise, such as, for instance, that druggists sell patent medicines, and that

they are criticised for doing some other things, as counter-prescribing, etc. I feel, in regard to these matters, that we, as physicians, had better let well enough alone. It is hardly necessary to enter into a deep discussion about the nostrum traffic, very largely for this reason: that the public demand nostrums and will have them, and it is better that the intelligent pharmacist should sell them than that the public should have to resort to the corner grocery, or a place of that kind. . . . I think that we have, as physicians, enough to do to take care of ourselves. It is our duty to cultivate such an elevated standard in our profession that we will not have to resort to nostrum-prescribing. It is necessary for you to do all you can to elevate and to raise the standard of the pharmaceutical profession; such an ideal standard as I have in the past had the pleasure of coming in contact with in my daily work. On our part we should attempt to do the same. I am sure that is the way with most men in the medical profession, and it will continue so."

The argument is forcible, and deserves extended application.

There is "a public demand"—*e. g.*—for houses of prostitution; therefore it would be much better for church-members to keep them than to allow the ignorant and the vicious to do so. Each man has enough to do to keep his own conduct clean without bothering about that of his neighbor.

Then, again, there is quite a large section of "the public" that "demands and will have" bogus medical diplomas. Evidently it would be much better to supply such parchments at respectable colleges than for "customers to have to resort" to vile institutions like that of Buchanan and his friends. How stupid it is, then, in the Medical Society of the State of Pennsylvania to try to have a law passed that will prevent the "intelligent professor" from meeting the demand. If we elevate the standard of our own colleges we need not bother about that of other States or of other sects.

What a fuss all these would-be reformers do make about trifles anyhow! It is much pleasanter and much more popular to leave ill enough alone. One makes fewer enemies, too.

The Conditions of Higher Medical Education.—We heartily commend the excellent words of our contemporary, the *Journal of the American Medical Association*, in reference to endowments, etc., quoted in another column. The wretched condition of medical education in our country has long enough been the subject of ridicule of other countries and of the best men among ourselves. It is a shame that the whole profession in the United States should set itself rigorously and vigorously to stop. State Boards of Examination are right, and should be established everywhere, but they are not sufficient. These can only properly raise their standards as the applicants for admission have been better prepared by the colleges.

About the following propositions it would appear there can be no possibility of discussion or doubt:

1. The minimum of study requisite for granting the degree of M.D. to students possessing no literary or scientific training, upon entering upon their medical studies, should either be four years, or three years of lengthened terms, with real and not sham entrance-examinations, and with a teaching and drilling in actual medical and clinical work that is adequate, and is not simply commercialism masquerading as medicine. Three years—such years as are usually passed—have become certainly and plainly insufficient.

2. No institution can adequately fit its students for their work without endowment or State aid. As a rule, the colleges possessing endowment will certainly prepare their students better than those without the necessary laboratories, the large corps of paid assistants, the enlarged teaching body, the drill of bedside instruction, etc.

3. The fixation of salaries of the teaching body is an absolute pre-requisite to elevation of standards, and a prevention of the graduation of the ill-fitted. It is also a pre-requisite for obtaining endowment, as neither individuals nor the community should endow or aid an institution whose profits and success are primarily for the benefit of individuals, and only secondarily and adventitiously of medical education and of the profession.

Model Dwellings for the Poor.—As a counterweight against the love of quackery by the gentlemen of "the cloth," one is occasionally delighted to find a member of the ministerial or priestly profession who shows an intelligent interest in sanitation and preventive medicine. Such interest is evident in a late lecture by Rabbi Joseph Krauskopf, of Philadelphia, on "Model Dwellings for the Poor." The practical, financial, and hygienic aspects of the question are kept well in view and dominate the entire treatment of the question. It is said that Philadelphia "has done more toward furnishing model dwellings to her poor than any other city."

"With a population considerably smaller than that of New York, we have more than three times the number of houses that the metropolis has, and they are for the most part the properties of their occupants, and while New York averages twenty persons to a dwelling, and Brooklyn ten, and Boston eight, our city averages but five persons to a house; and while the death-rate of New York is 25 per 1000 of its population, and that of Boston 24, and that of Brooklyn 22, we in Philadelphia are fortunate enough to be able to report but 19."

Not content with this showing it is proposed to

go much further, and to organize a "Model Dwelling Company," for erecting a building "that shall yield physical and moral health to a mass of depraved and suffering humanity." Aid is asked, and should be promptly given.

A Fifty-days' Fast.—The newspapers tell of the end of the exhibition-fast of Jacques, in New York. One wonders no longer at the stories that have been told by Chinese travellers, that a man could be hired to die for another for a good dinner. This phenomenal faster is said to have eaten nothing for fifty days, during which time he lost 32¼ pounds, having started in weighing 144½ pounds. During the last two days his sufferings are reported to have been very great, but whether these were real or simulated for theatrical effect, does not surely appear. The ever-present manufacturer of some "peptonized" material furnished Jacques at the end of his fast, some of his "food-product" (duly reported), and now furnishes the world with marked copies of the newspaper report, and with circulars of information in reference thereto. Jacques is also said to have gained during his fast one and one-fourth inches in height. Of course, he used pinches of a powder, for the secret of which the Russian Government offered $50,000. Famine, as is well known, is endemic in Russia.

The Ravages of Diphtheria.—According to the records of the Registration Department of the Philadelphia Bureau of Health, there were in 1892 5051 cases of diphtheria reported by physicians, of which 1484 were fatal. It is in the presence of such facts that the illogicality of popular feeling becomes startlingly manifest. One murder arouses more widespread interest than the thousands of deaths (many or most of which are preventable) silently taking place all over the world. The people who work themselves into a frenzy of enthusiasm over a selfish quack who makes millions of dollars by secrecy in treating a few old cases of often-merited "disease," have no thanks for the profession that unselfishly toils to prevent or cure the deaths of myriads of the innocent and the young.

The Profession and Public Scandal.—The New York *Herald* has at last stopped its daily columns of medical gossip as regards useless and hazardous surgical operations, in which so many members of the profession have aided it in its pernicious scandal-mongering. The result of it all is that the paper has filled its columns in a dull season, the enterprising doctor has gotten much free advertising, and the undiscriminating public has still more exaggeratedly erroneous and absurd suspicions and opinions upon matters about which it is incompetent to judge. The self-advertiser always plays into the hand of his half-brother the quack.

Expensive Economy.—An attempt is again being made to cripple the splendid work of the Surgeon-General's Office at Washington by a proposed omission or reduction in the usual appropriation for printing the catatogue of the library, and for the purchase of books. Every physician is either directly or indirectly interested in seeing that this is not done, and the members of the American medical profession should individually, or as societies, take action to prevent it. As reported to the House, the appropriation omits altogether the item for printing the catalogue (amounting only to $12,000), and reduces from $10,000 to $6000, the customary allowance for the purchase of books. Such economy, in the long run, is absurdly expensive.

Scheming and Frankness.—The medical politician who takes roundabout, secret, and snaky methods of "getting there," confesses two self-stultifying facts: First that his objects are not good and honest enough to be openly avowed; and second, that his strength and self-confidence are not sufficient to attempt the effectualization of his aims, except by chicane and subtlety. All the world recognizes what the politician thinks he is so expertly concealing from all the world, that is, that he is both unscrupulous and weak.

SELECTION.

ENDOWED COLLEGES AND HIGHER MEDICAL EDUCATION.

ON the part of the colleges which propose to cater to students seeking short terms of instruction, the apology is made that however much they desire to keep step, forward and upward in the march, they cannot financially afford to meet the advance requirements.

Such institutions are in an unenviable dilemma, for they cannot stand still or paddle along in the old beaten paths. They are destined to either fall back into an innocuous desuetude, or are obliged by the new conditions to gird themselves anew for the exigencies that are before them.

The new conditions imply a provision of the necessary means for creating modern laboratories with accompanying apparatus and accessories of all kinds. Such needed adjuncts, including a trained corps of teachers, are to be obtained only through munificent endowments provided and bestowed by those who are bountifully blessed with this world's goods, or by State aid.

Endowments or State aid should only be given to medical schools having a practical relation with a university or academic college, as one of the post-graduate departments of such institutions. A nominal affiliation is not a sufficient condition. The one must be an integral part of the other. Such a relation naturally fosters and encourages a suitable preliminary course of study for those who propose entering the medical department, the curriculum of which should be, *de facto*, one of the post-graduate courses.

Teachers of the science of medicine in university medical departments should be paid regular salaries, the same as teachers in other departments, and open prizes offered for results of original research.

Teachers of the art of medicine need not necessarily be salaried men, as other emoluments naturally flow to the occupants of such chairs.

Large endowments have recently been made to the medical department of the University of Pennsylvania, the medical department of the University of California, the medical department of the Columbia University, the medical department of Johns Hopkins University, the medical department of the Western Reserve University (at Cleveland), to the medical department of the Chicago University, the medical department of the Northwestern University, the medical department of Dartmouth, and perhaps others; material, if not munificent State aid, is annually given by the Legislature of Michigan to the medical department of the State University; the same may be said of the Legislature of Minnesota, and, perhaps, of other States.

Such are the measures necessary for the promotion of the higher grades of medical instruction, and without such substantial foundations, medical colleges, the managers of which are conscious of their shortcomings, must make a change of front, squarely meet the issue that is before them, and show by their works an honest acceptance of the educational situation.

To the best of our knowledge neither State aid nor financial endowments have ever in any instance been bestowed upon commercial medical colleges, nor is it likely that we shall be called upon to make mention of such an institution. Moneyed men are usually too shrewd to give of their wealth for such individual aggrandizements.—*Journ. Amer. Med. Association.*

REVIEWS.

DISEASES OF THE EYE, EAR, THROAT, AND NOSE. By FRANK E. MILLER, M.D., JAMES P. MCEVOY, M.D., and JOHN E. WEEKS, M.D. Students' Quiz Series. Philadelphia: Lea Brothers & Co.

WE doubt the advisability, even in a "quiz-compend," of attempting to compress an ophthalmologic epitome into one hundred and ten pages. The authors have succeeded as well as was possible. In view of the too prevalent custom of slip-shod refraction work, we are delighted to find the ophthalmometer of Javal and Schiötz spoken of as "an aid, in a limited sense, for the determination of refraction." It is therefore evident that it cannot be used as the sole instrument in cataract-extraction and medical science! "The trial-lenses must be depended on," etc. We can forgive anything after that, even though not a word is said about eye-strain, what it is and what it signifies, and not a word as to the symptoms of hyperopia and astigmatism—facts that make up about nine-tenths of an oculist's routine concern and work; and our pardon is especially full and free because of the wonderful New York words, "It is always well to employ a mydriatic."

Skiascopy is persistently spelled *skioscopy*.

As there are only sixty-four pages of this little work devoted to diseases of the throat and nose, it would be impossible to deal at length with the many subjects involved. Despite this fact, the subjects have been presented clearly and concisely. One commendable feature of the book is that of the various plates presented many are original, instead of being copied from text-books on the subject, which is usually the case.

The differential table of the signs and symptoms of the principal laryngeal diseases is an admirable one for both student and practitioner. One serious defect in the book is the failure to mention the forms of pharyngeal and laryngeal affections dependent upon lesions of internal organs, also those cases of pharyngitis that occur in patients of a highly nervous temperament—in other words, of reflex origin. We think these subjects too important to have been entirely omitted.

FISSURE OF THE ANUS AND FISTULA-IN-ANO. By LEWIS H. ADLER, JR., M.D. 12mo, pp. 78. Detroit: Geo. S. Davis, 1892.

IN this little *brochure* the author has endeavored to give a concise yet thorough account of the two affections—fissure of the anus and fistula-in-ano—in respect to their etiology, symptomatology, diagnosis, and treatment, and not to write upon rectal fistulæ in general.

To neglect, carelessness, want of cleanliness, a false sense of modesty, and the use of improper paper for toilet purposes are attributed the causation and aggravation of many of the rectal troubles encountered by the specialist.

The author insists that the diagnosis of these troubles, to be complete and satisfactory, must in every case be based upon an ocular and thorough digital examination.

The work throughout is modern and satisfactory, and it is to be hoped that in the attractive form in which it is issued it may enjoy a wide circulation and excite a deeper professional interest in rectal troubles than exists at this time.

DIE LEHRE VON DEN NASENEITERUNGEN, MIT BESONDERER RÜCKSICHT AUF DIE ERKRANKUNGEN DES SIEB- UND KEILBEINS UND DEREN CHIRURGISCHE BEHANDLUNG. Mit 5 Abbildungen. VON DR. LUDWIG GRÜNWALD. Pp. 165. Munich. (On the Suppurative Processes in the Nasal Passages, with special reference to the Diseases of the Ethmoid and Sphenoid Bones and their Surgical Treatment.)

THIS pamphlet of Dr. Grünwald is a learned and elaborate monograph dealing with the diseases of the nose and associated chambers in which a purulent discharge is a conspicuous symptom. We cannot but believe that such a method of classification of nasal diseases is eminently artificial; nevertheless the author has brought together in a convenient form the acute and chronic suppurative processes in the regions named, and has treated the subject in a thorough and practical manner. Themes such as anosmia, parosmia, reflex headache, psychical phenomena, and atrophic changes are embraced in the main proposition. The surgical methods accepted agree with those in general use in this country. A full list of references to the literature of the subject completes this valuable essay.

CONTRIBUTIONS OF PHYSICIANS TO ENGLISH AND AMERICAN LITERATURE. By ROBERT C. KENNER, M.D. Pp. 93. Detroit: George S. Davis, 1892.

As far as it goes, this little volume is highly interesting, giving us brief notices and selections from the writings of Mark Akenside, John Arbuthnot, John Armstrong, Sir Richard Blackmore, Sir Thomas Brown, Walter Charleton, George Crabbe, James Currie, Erasmus Darwin, John W. Draper, Sir Samuel Garth, Oliver Goldsmith, Oliver Wendell Holmes, John Keats, Charles J. Lever, John Locke, D. M. Moir, T. G. Smollett, Henry Vaughan, and John Wolcott. When we lay it down we are tempted to ask for additional volumes, when we call to mind so many equally worthy, of whom our profession would be glad to know more as to their early struggles, their earlier writings, and what they did in our profession. We advise every physician to read this brochure, if for nothing more than the selections from our own Holmes, particularly "Rip van Winkle, M.D."

A HANDBOOK OF THE DISEASES OF THE EYE, AND THEIR TREATMENT. By HENRY R. SWANZY, A.M., M.B., F.R.C.S.I. Fourth edition. Philadelphia: P. Blakiston, Son & Co., 1892.

CONCERNING the fourth edition of this well-known and excellent work, the author says:

"The book has now again been revised throughout and brought up to date. In an appendix, Holmgren's method for testing the color-sense has been described in greater detail than before. Some new illustrations have been added. The great difficulty of an author in the preparation of a book like this consists in 'saying not all he might, but all he ought.' It is his duty to give a succinct and practical account of his subject in its most modern aspect, without weighting his pages with excessive detail and prolonged discussion. This has been my aim. For deeper and wider information, larger handbooks and original monographs must be consulted."

TRANSACTIONS OF THE TEXAS STATE MEDICAL ASSOCIATION, 1892. Pp. 310.

OF this class of medical literature this is a worthy volume. The work of the society being grouped in sections, the papers are considered and published in that order, enabling each to attend to the reading only of those which are in the line of his own work. Space does not permit of an extended notice of the papers, but all are well worth a careful perusal. We commend the manner of arranging the volume, giving at a glance, the officers, next place and time of meeting, etc. These points are often only found after a tedious hunt through the entire work, and cause unnecessary trouble to those who are interested in such data. We would, however, urge that in the next volume the Secretary publish the names and addresses of the officers of the auxiliary societies, or at least of their secretaries.

A MANUAL OF CLINICAL OPHTHALMOLOGY. By HOWARD F. HANSELL, M.D., and JAMES H. BELL, M.D. With 120 illustrations. Philadelphia: P. Blakiston, Son & Co., 1892.

THERE are very few things to blame, and many to praise, in this excellent little compendium. Within the self-imposed limits it may be recommended as one of the best of the smaller manuals upon ophthalmology. We cannot help wishing that a fuller treatment had been given to many subjects. Perhaps a somewhat frequent arbitrariness and apparent dogmatism would have been avoided if the authors had given themselves more room. To say or to imply, *e. g.*, that cocaine always "destroys the corneal epithelium and clouds its transparency," is decidedly an over-statement. Occasional grammatical sins also occur, as for instance: *The external rectiabduction, overcome in the average 8°.* Do the authors pronounce *fibre* or *fiber?* And if they pronounce the word as Americans do, why do they spell it as Frenchmen do? We imagine the authors may now wish they had omitted that relic of medievalism, the dedication!

NEWS ITEMS.

The International Congress of Charities, Correction, and Philanthropy, June 12–18, 1893.—One of the series of international congresses to be held in Chicago in 1893 is to be devoted to the subjects of Charities, Correction, and Philanthropy, and the Fourth Section of this is to consider all matters relating to the Hospital Care of the Sick, the Training of Nurses, Dispensary Work, and First Aid to the Injured. The Committee of Organization of the Congress has appointed Dr. John S. Billings, Surgeon U. S. Army, as Chairman of this Section, and Dr. Henry M. Hurd, Superintendent of the Johns Hopkins Hospital in Baltimore, as its Secretary, and has authorized and requested them to complete its organization, to extend invitations, and to prepare a program for its work. Miss Isabel A. Hampton, Superintendent of the Training School for Nurses of the Johns Hopkins Hospital, has been appointed Chairman of that part of the work of the Section which relates to the training of nurses.

This Section will hold five sectional meetings of about two hours each, commencing June 12, 1893, and will also have charge of one of the general sessions of the Congress, viz., that held on the morning of June 14th.

It is desired that this shall be a truly international gathering for conference on the subjects allotted to this Section, and all who are interested in Hospitals, in the Training of Nurses, in Dispensaries, or in First Aid to the Injured, are cordially invited to be present, to contribute papers and to take part in the discussions.

The papers and proceedings will probably be printed as a separate volume, and it is hoped that this will represent the best methods and the best work in each of these departments in all parts of the world.

The following are suggested as subjects for special consideration in papers to be prepared:

1. Hospital Organization—Governing Bodies—Relations of the Medical Staff and of Nurses' Training Schools.

2. Hospital Finances—Means of Support—Mode of Keeping Accounts—Cost.

3. Plan and Construction of Recently Built General Hospitals, embodying the Latest Improvements.

4. Relations of Hospitals to Increase of Knowledge, to Medical Education, and to the Medical Profession. Hospital Records, Statistics, and Reports.

5. Pay Patients in Hospitals.

6. Isolating Wards and Hospitals for Contagious Diseases.

7. Hospital Diets, Dietaries, Kitchens, etc.

8. Hospital Amphitheaters and Operating-rooms.

9. Hospital Laundries and Disinfecting Establishments.

10. Army and Navy Hospitals—Emergency Hospitals in Time of Epidemics—Temporary and Movable Hospitals.

11. Small and Special Hospitals, Cottage Hospitals, School Hospitals, Private Hospitals, Sanatoriums, etc. Convalescent Hospitals, and What to Do with Incurables.

12. History and Present Condition of Hospitals in the Large Cities.

13. Training Schools for Nurses.[1]

14. Dispensaries—Relations to the Public and to the Medical Profession. Dispensary Records.

15. First Aid to the Injured. Associations for the best means of popular instruction in First Aid to the Injured, and its Place in General Education.

Persons desiring to present papers, or to share in the discussions of this Section, are requested to communicate with the Secretary at once. The period of time allotted for the preparation of the program is necessarily brief and it is essential that all who are willing to assist in this work should act promptly.

The American Surgical Association will hold its next annual meeting at Buffalo, N. Y., May 30, 31, and June 1, 1893.

The following is a list of the subjects which have been selected for special consideration, with the names of the Fellows who have promised to prepare the opening papers upon the several subjects, and of those who are expected to open and take part in the discussions:

The President's Address.

"The Modern Treatment of Compound Fractures," by Nicholas Senn, M.D. Discussion by Drs. Roswell Park and F. S. Dennis.

"Hypertrophies and Degenerations of Cicatrices and Cicatricial Tissue," by J. Collins Warren, M.D. Discussion by Drs. C. H. Mastin, G. R. Fowler, and W. H. Carmalt.

"Surgery of the Gall-bladder," by M. H. Richardson, M.D. Discussion by Drs. J. Ewing Mears, A. Vander Veer, William H. Carmalt, and Theodore A McGraw.

"Surgery of the Rectum," by A. G. Gerster, M.D. Discussion by Drs. L. S. Pilcher, H. H. Mudd, and L. McLane Tiffany.

"Surgical Treatment of Cervical, Thoracic, and Abdominal Aneurism," by C. B. Nancrede, M.D.

"Surgery of the Prostate," by J. William White, M.D. Discussion by Drs. Hunter McGuire, Theodore F. Prewitt, R. F. Weir, and F. H. Gerrish.

"Treatment of Carbuncle," by F. Lange, M.D. Discussion by Drs. Robert Abbe, John B. Roberts, and J. S. Wight.

"Unreduced Dislocations of the Astragalus," by Stephen Smith, M.D., of New York.

The Section on Diseases of the Mind and Nervous System of the Pan-American Medical Congress announces that strong efforts are being made to insure the scientific and social success of the meetings. Papers are expected from distinguished neurologists and psychiatrists. A cordial invitation is extended to all physicians to attend the meetings and participate in the proceedings. Dr. A. B. Richardson, of Columbia, Ohio, is the English-speaking secretary, and Dr. R. M. G. Echeverria, the Spanish-speaking secretary.

[1] In accordance with the general program of the Section, nurses will take part in the general session and in two sectional meetings, and will hold in addition three separate meetings—June 13th, 14th, and 17th.

For these three separate meetings papers on subjects of special interest to Nurses will be prepared and discussed. The following are suggested as subjects to select from:

Training Schools in England and America.
Proper Organization of Training Schools.
Nursing in Infirmaries and Almshouses.
Nursing of the Insane. Obstetric Nursing.
Nursing of Infectious Diseases.
Nursing in Sanatoriums and Home Hospitals.
Private Nursing. Nursing by Religious Orders.
Work of Graduate Nurses.

All communications relating to this portion of the work of the Section should be addressed to Miss Isabel A. Hampton, Chairman, the Johns Hopkins Hospital, Baltimore, Md.

BOOKS AND PAMPHLETS RECEIVED.

Delivery through the Abdominal Walls *vs.* Craniotomy, in Otherwise Impossible Births. By George I. McKelway, M.D. Reprint, 1892.

An Obscure Case of Appendicitis Masked and Complicated by Ovarian Adhesions; Operation and Recovery. By George I. McKelway, M.D. Reprint, 1892.

The Use of Menthol through the Stomach-tube. By A. L. Benedict, A.M., M.D. Reprint, 1892.

The Laboratories of the College of Physicians and Surgeons of Chicago. Circular.

The Relative Safety of Ether and Chloroform. By W. Roger Williams, F.R.C.S. Eng. Reprint, 1892.

Discussion of Dr. Vaughan's Paper. By Bayard Holmes, B.S., M.D. Reprint, 1892.

A Case of Metastatic Abscess of the Brain; Operation; Death. By G. L. Walton, M.D. Reprint, 1892.

Du Traitement des Suppurations Rebelles du Sinus Maxillaire. Par le Docteur A. Cartaz. Reprint, 1892.

The Modern Antipyretics; their Action in Health and Disease. By Isaac Ott, M.D. Brochure. Second edition. Easton, Pa.: E. D. Vogel, 1892.

On Peripheral Neuritis. A Treatise. By James Ross, M.D., LL.D, and Judson S. Bury, M.D. London: Charles Griffin & Co., Limited, 1893.

Conclusions Regarding the Use of Drainage-tubes and Ligatures, and the Possibilities of Skin-disinfection based upon Bacteriological Investigations. By Hunter Robb, M.D. Reprint, 1892.

Transactions of the Medical Society of the State of North Carolina. Thirty-ninth Annual Session, held at Wilmington, N. C., May, 1892. Wilmington, N. C.: Jackson & Bell, 1892.

Observations on Cholera and Quarantine. A National Quarantine Implies National Seclusion. By C. W. Chancellor, M.D. Pamphlet. Baltimore: John Murphy & Co.

Transactions of the American Gynecological Society. Vol. XVII, for the year 1892. Philadelphia: Wm. J. Dornan, 1892.

Prospectus of the London Post-Graduate Course. Fourth Year. Spring Term, 1893.

Ueber die hypodermatischen Injektionen von Blutserum bei der Behandlung der Lungentuberkulose. Von Mariano Semmola. Reprint. Wien, 1891.